This is a digital copy of a book that was preserved for generations on library shelves before it was carefully scanned by Google as part of a project to make the world's books discoverable online.

It has survived long enough for the copyright to expire and the book to enter the public domain. A public domain book is one that was never subject to copyright or whose legal copyright term has expired. Whether a book is in the public domain may vary country to country. Public domain books are our gateways to the past, representing a wealth of history, culture and knowledge that's often difficult to discover.

Marks, notations and other marginalia present in the original volume will appear in this file - a reminder of this book's long journey from the publisher to a library and finally to you.

Usage guidelines

Google is proud to partner with libraries to digitize public domain materials and make them widely accessible. Public domain books belong to the public and we are merely their custodians. Nevertheless, this work is expensive, so in order to keep providing this resource, we have taken steps to prevent abuse by commercial parties, including placing technical restrictions on automated querying.

We also ask that you:

+ *Make non-commercial use of the files* We designed Google Book Search for use by individuals, and we request that you use these files for personal, non-commercial purposes.

+ *Refrain from automated querying* Do not send automated queries of any sort to Google's system: If you are conducting research on machine translation, optical character recognition or other areas where access to a large amount of text is helpful, please contact us. We encourage the use of public domain materials for these purposes and may be able to help.

+ *Maintain attribution* The Google "watermark" you see on each file is essential for informing people about this project and helping them find additional materials through Google Book Search. Please do not remove it.

+ *Keep it legal* Whatever your use, remember that you are responsible for ensuring that what you are doing is legal. Do not assume that just because we believe a book is in the public domain for users in the United States, that the work is also in the public domain for users in other countries. Whether a book is still in copyright varies from country to country, and we can't offer guidance on whether any specific use of any specific book is allowed. Please do not assume that a book's appearance in Google Book Search means it can be used in any manner anywhere in the world. Copyright infringement liability can be quite severe.

About Google Book Search

Google's mission is to organize the world's information and to make it universally accessible and useful. Google Book Search helps readers discover the world's books while helping authors and publishers reach new audiences. You can search through the full text of this book on the web at `http://books.google.com/`

John Collett

COMPLIMENTS OF

Indiana State Board of Agriculture,

ALEX. HERON, Sec'y,

EXCHANGES ACCEPTABLE. INDIANAPOLIS, IND.

Aug. 19. 1886.

S
59
.A3

Jno Sutherland

THIRTY-FIFTH ANNUAL REPORT

OF THE

INDIANA

State Board of Agriculture.

VOLUME XXVII, 1885.

Including the Proceedings of the Annual Meeting, 1886; Meetings of the Cattle Breeders, Horse Breeders, Swine Breeders, Wool Growers, Cane Growers, and Bee Keepers, 1886.

TO THE GOVERNOR.

INDIANAPOLIS:
WM. B. BURFORD, CONTRACTOR FOR STATE PRINTING AND BINDING.
1886.

Exch.
Indiana State Library
1-16-1930

INDIANAPOLIS, January 30, 1886.

To His Excellency, ISAAC P. GRAY,
Governor of Indiana:

SIR—In compliance with the Act of the General Assembly, approved February 17, 1852, we have the honor to submit herewith the Annual Report of the Indiana State Board of Agriculture for the year ending December 31, 1885, together with such matter as is deemed interesting and useful.

Very respectfully,
R. M. LOCKHART, President.

ALEX. HERON, Secretary.

STATE OF INDIANA,
GOVERNOR'S OFFICE,
INDIANAPOLIS, February 22, 1886.

Received and examined by the Governor, and referred to the Auditor of State for verification of the financial statement.

AUDITOR OF STATE'S OFFICE,
February 25, 1886.

This office has no cognizance of the financial operations of the State Board of Agriculture, excepting that the annual appropriation of $1,500 by this State was paid according to law, the receipt of which is acknowledged in its financial statement.

JAMES H. RICE. Auditor of State.

FEBRUARY 25, 1886.

Returned by the Auditor of State and transmitted to the Secretary of State to be published upon the order of the Board of Public Printing and Binding.

PIERRE GRAY, Private Secretary.

Filed in this office this 25th day of February, 1886.

W. R. MYERS, Secretary of State.

CONTENTS.

Record Table 6
State Industrial Association, Directory, 1886 7
Weather Record 8
Introductory. 15
Organization of Board 17
Proceedings February, Executive and State Fair Meetings 18
Proceedings Annual Meeting, 1886. 26
Award of State Fair Premiums 63
Report of Committees on Special Merits 100
Report of State Chemist on Commercial Fertilizers 163
Lectures—Women as Inventors, by Mrs. L. May Wheeler, Indianapolis . 173
Insects Affecting Corn, Prof. F. M. Webster, Purdue University, Lafayette, Ind 180
Management of Agricultural Fairs, Hon. J. N. Davidson, Crawfordsville, Ind. 217
The Labor Question, Hon. Jno. Q. A. Sieg, Corydon, Ind . . . 223
Agriculture, the Source of Prosperity, Col. J. B. Maynard, Indianapolis, Ind. 226
Drainage, Prof. J. L. Campbell, of U. S. Geodetic Survey, Crawfordsville, Ind. 237
Song Birds of Indiana, Prof. J. Maurice Thompson, State Geologist, Indianapolis 247
Comparison of Various Classes, J. M. Osborne, Toledo, Ohio . 252
Fish Culture, John Miller, Johnson County. 263
Agriculture as a Learned Profession, Chas. R. Dryer, M. D., Ft. Wayne. 268
Reports from County and District Agricultural Societies 278
Tables of Officers, Premiums, Entries, Receipts, etc., Agricultural Societies 354
Statistics of Crops, etc., of Indiana. 366
Proceedings of Indiana Shorthorn Breeders. 382
Proceedings of Indiana Jersey Cattle Breeders. 428
Proceedings of Indiana Horse Breeders. 440
Proceedings of Indiana Wool Growers 450
Proceedings of Indiana Swine Breeders. 478
Proceedings of Indiana Bee Keepers 504
Proceedings of Indiana Cane Growers 531

INDIANA STATE BOARD OF AGRICULTURE—1885.

1st District—Robert Mitchell, Princeton, Gibson County.
2d District—Samuel Hargrove, Union, Pike County.
3d District—J. Q. A. Sieg, Corydon, Harrison County.
4th District—W. B. Seward, Bloomington, Monroe County.
5th District—Will A. Greer, Aurora, Dearborn County.
6th District—Dick Jones, Columbus, Bartholomew County.
7th District—E. H. Peed, New Castle, Henry County.
8th District—S. W. Dungan, Franklin, Johnson County.
9th District—H. LaTourette, Covington, Fountain County.
10th District—Jasper N. Davidson, Whitesville, Montgomery County.
11th District—John M. Graham, Muncie, Delaware County.
12th District—John M. Boggs, Lafayette, Tippecanoe County.
13th District—John Ratliff, Marion, Grant County.
14th District—L. B. Custer, Logansport, Cass County.
15th District—W. A. Banks, Door Village, Laporte County.
16th District—R. M. Lockhart, Waterloo, Dekalb County.

OFFICERS FOR 1885.

Hon. R. M. Lockhart	President.
Dick Jones	Vice President.
Alex. Heron	Secretary.
Sylvester Johnson	Treasurer.
Hon. Fielding Beeler	General Superintendent

EXECUTIVE COMMITTEE.

Hon. R. M. Lockhart, President.
Robert Mitchell, Jasper N. Davidson,
S. W. Dungan, W. B. Seward.

A TABLE *showing the Officers, Place and Receipts of each Fair Held by the State Board of Agriculture.*

Year.	PRESIDENT.	SECRETARY.	TREASURER.	GENERAL SUPERINTENDENT.	PLACE OF FAIR.	Premiums Paid.	Receipts of Fair.
1852	Gov. Joseph A. Wright	John B. Dillon	Royal Mayhew	W. T. Dennis	Indianapolis	......	$4,651 55
1853	Gov. Joseph A. Wright	John B. Dillon	Royal Mayhew	J. J. Bingham	Lafayette	......	6,751 55
1854	Gov. Joseph A. Wright	Wm. T. Dennis	Royal Mayhew	W. T. Dennis	Madison	......	7,430 77
1855	Gen. Joseph Orr	John B. Dillon	S. A. Buell	Calvin Fletcher, Jr.	Indianapolis	$3,753 00	10,823 75
1856	Dr. A. C. Stevenson	Ignatius Brown	S. A. Buell	Calvin Fletcher, Jr.	Indianapolis	4,225 00	14,373 34
1857	Dr. A. C. Stevenson	Ignatius Brown	S. A. Buell	Calvin Fletcher, Jr.	Indianapolis	4,127 00	14,058 75
1858	Dr. A. C. Stevenson	John B. Dillon	Thomas H. Sharp	Calvin Fletcher, Jr.	Indianapolis	......	11,500 00
1859	George D. Wagner	Sohn B. Dillon	Thomas H. Sharp	James L. Bradley	New Albany	6,163 00	8,599 50
1860	George D. Wagner	Wm. T. Dennis	Thomas H. Sharp	James L Bradley	Indianapolis	3,827 00	11,902 00
1861	D. P. Holloway	Wm. T. Dennis	H. A. Fletcher	....	No Fair	......	......
1862	James D. Williams	W. H. Loomis	H. A. Fletcher	J. A. Grosvenor	Indianapolis	3,994 00	4,127 55
1863	A. D. Hamrick	W. H. Loomis	H. A. Fletcher	J. A. Grosvenor	Indianapolis	......	9,559 36
1864	Stearns Fisher	W. H. Loomis	Francis King	W. H. Loomis	Indianapolis	4,121 00	10,785 50
1865	Stearns Fisher	W. H. Loomis	Carlos Dickson	J. A. Grosvenor	Fort Wayne	4,078 00	11,597 55
1866	Stearns Fisher	W. H. Loomis	Carlos Dickson	J. A. Grosvenor	Indianapolis	......	17,179 36
1867	A. D. Hamrick	A. J. Holmes	Carlos Dickson	J. B. Sullivan	Terre Haute	6,331 00	17,148 05
1868	A. D. Hamrick	A. J. Holmes	Carlos Dickson	J. B. Sullivan	Indianapolis	7,087 00	16,799 00
1869	A. D. Hamrick	A. J. Holmes	Carlos Dickson	J. B. Sullivan	Indianapolis	7,517 00	22,345 65
1870	J. D. Williams	Joseph Poole	Carlos Dickson	J. S. Benson	Indianapolis	7,914 00	19,155 23
1871	J. D. Williams	Joseph Poole	Carlos Dickson	Jacob Mutz	Indianapolis	8,564 00	20,549 90
1872	John Sutherland	Alex. Heron	Carlos Dickson	H. W. Caldwell	Indianapolis	9,619 20	23,484 35
1873	John Sutherland	Alex. Heron	Carlos Dickson	H. W. Caldwell	Indianapolis	8,864 75	52,309 10
1874	John Sutherland	Alex. Heron	Carlos Dickson	E. J. Howland	Indianapolis	10,754 00	45,330 48
1875	William Crim	Alex. Heron	Carlos Dickson	E. J. Howland	Indianapolis	12,068 20	43,214 99
1876	Hezekiah Caldwell	Alex. Heron	Carlos Dickson	J. L. Hanna	Indianapolis	8,179 30	6,342 70
1877	Jacob Mutz	Alex. Heron	Carlos Dickson	J. W. Furnas	Indianapolis	6,337 95	14,511 00
1878	W. B. Seward	Alex. Heron	Carlos Dickson	R. M. Lockhart	Indianapolis	5,057 00	15,991 33
1879	Robert Mitchell	Alex. Heron	Carlos Dickson	R. M. Lockhart	Indianapolis	5,472 00	22,919 50
1880	W. H. Ragan	Alex. Heron	J. A. Wildman	Fielding Beeler	Indianapolis	6,553 00	18,809 05
1881	R. M. Lockhart	Alex. Heron	J. A. Wildman	Fielding Beeler	Indianapolis	6,855 50	17,874 00
1882	H. C. Meredith	Alex. Heron	J. A. Wildman	Fielding Beeler	Indianapolis	8,096 00	25,631 10
1883	Robert Mitchell	Alex. Heron	J. A. Wildman	Fielding Beeler	Indianapolis	9,581 13	26,858 43
1884	Robert Mitchell	Alex. Heron	S. Johnson.	Fielding Beeler	Indianapolis	10,414 30	24,479 40
1885	R. M. Lockhart	Alex. Heron	S. Johnson.	Fielding Beeler	Indianapolis	9,000 50	26,555 11
1886	W. B. Seward	Alex. Heron	S. Johnson.	H. B. Stout	Indianapolis	......	......

A. C. Jameson filled the office of Treasurer for 1873, to the 27th of August, when he resigned, and Carlos Dickson was appointed to fill the unexpired term. H. C. Meredith died July 5th, and L. B. Custer, Vice President, came in as President for the unexpired term.

NOTE.—In consequence of the loss of papers, incident to the military occupancy of the rooms of the State Board of Agriculture, during the late war, and in complete records preserved, the amount of premiums awarded at the several State Fairs is necessarily incomplete.

STATE INDUSTRIAL ASSOCIATIONS.

OFFICERS FOR THE YEAR 1886.

HEADQUARTERS IN THE AGRICULTURAL ROOMS, CORNER OF TENNESSEE AND MARKET STREETS.

Indiana State Board of Agriculture.—President, Hon. W. B. Seward, Monroe County; Secretary, Alex. Heron, Indianapolis, Marion County. Organized May, 1851.

Indiana Horticultural Society.—President, Sylvester Johnson, Irvington, Marion County; Secretary, C. M. Hobbs, Bridgeport, Marion County. Organized 1842.

State Association of Shorthorn Breeders.—President, Hon. Robert Mitchell, Princeton; Secretary, Walter J. Quick, Columbus, Ind. Organized May, 1872.

Indiana Horse Breeders' Association.—President, F. M. Busby, Lebanon, Boone County; Secretary, W. P. Ijams, Indianapolis. Organized January, 1885.

Indiana Jersey Cattle Breeders' Association.—President, Amos Garretson, Pendleton, Madison County; Secretary, T. A. Lloyd, Indianapolis. Organized January, 1883.

Indiana Swine Breeders' Association.—President, D. L. Thomas, Rushville; Secretary, W. E. Jackson, Knightstown. Organized January, 1877.

Indiana Wool Growers' Association.—President, Thomas Nelson, Bloomingdale, Parke County; Secretary, I. J. Farquhar, Trenton, Randolph County. Organized October, 1876.

Indiana Poultry Breeders' Association.—President, H. C. G. Bals, Indianapolis, Marion County; Secretary, D. H. Jenkins, Indianapolis, Marion County. Organized January, 1875.

Indiana Bee Keepers' Association.—President, I. N. Cotton, Traders Point, Ind.; Secretary, F. L. Daugherty, Indianapolis. Organized October, 1879.

Indiana Cane Growers' Association.—President, Dr. A. Furnas, Danville, Hendricks County; Secretary, W. L. Anderson, Ladoga, Montgomery County. Organized December, 1882.

Indiana Tile Makers' Association.—President, Thomas Chandler, Indianapolis; Secretary, T. A. Randall, Indianapolis, Marion County. Organized November, 1876.

Indiana Women's State Industrial Association.—President, Mrs. A. M. Noe, Indianapolis, Marion County; Secretary, Miss Mary R. Heron, Indianapolis, Marion County. Organized September, 1878.

TABLE I.

METEOROLOGICAL TABLES.

MONTHLY MEAN BAROMETER, THERMOMETER, ETC.

Table Showing Monthly Mean Barometer, Thermometer, Relative Humidity; Maximum and Minimum Temperatures; Prevailing Direction of Wind; Number of Clear, Fair and Cloudy Days; Average Amount of Cloudiness; Number of Days on Which 0.01 *Inch or More Precipitation Fell; Total Amount of Precipitation and Number of Days on Which the Temperature Fell Below the Freezing Point in Indianapolis, Ind., for Each Month of the Year* 1885, *as Recorded in the United States Signal Office.*

1885. MONTHS.	Mean Barometer, Reduced to Sea Level and Standard Gravity—Inches.	Mean Temperature—Degrees.	Mean Relative Humidity—Per cent.	Maximum Temperature—Degrees.	Minimum Temperature—Degrees.	Prevailing Direction of Wind.	Number of Clear Days	Number of Fair Days	Number of Cloudy Days.	Average Cloudiness During the Month. Scale, 0-10.	Number of Days on which 0.01 Inch or More of Precipitation Fell.	Total Amount of Precipitation—Inches.	No. of Days on which Temperature Fell Below Freezing.
January	30.156	22.5	85.3	51.7	-11.3	W	9	12	10	5.3	14	3.31	27
February	30.026	20.5	83.7	59.0	-9.0	S W	8	14	6	4.8	14	1.54	25
March	30.095	33.0	70.6	63.8	3.2	W & S W	4	17	10	5.9	11	0.82	21
April	30.014	51.5	69.1	78.3	27.8	S	4	14	12	6.3	13	5.28	4
May	29.909	60.5	66.2	87.7	35.3	W	7	17	7	5.3	16	3.66	. . .
June	30.013	68.8	71.0	90.1	41.1	S	8	15	7	5.2	10	5.74	. . .
July	29.964	76.3	70.9	94.5	47.5	S W	9	18	4	4.6	10	1.43	. . .
August	29.946	70.0	73.8	95.1	47.7	S W	10	14	7	4.5	12	5.82	. . .
September . . .	30.025	63.9	72.9	83.8	38.4	S	12	7	11	5.1	8	3.50	. . .
October	29.973	50.4	73.6	77.8	31.4	S	10	7	14	5.5	14	3.25	2
November . . .	30.001	41.9	73.7	69.8	23.7	S	5	7	18	7.3	11	2.71	11
December . . .	30.106	32.0	76.0	56.3	-2.1	W	6	11	14	6.2	14	2.45	21
Annual means.	30.019	49.3	73.9	75.6	22.8	S W	. .	. .	. .	5.5	. . . .	. . .	. .
Annual totals .	. . . .	. . .	. . .	. . .	. . .	. .	92	153	120	. . .	147	39.51	111

TABLE II.

DAILY AND MONTHLY MEAN BAROMETER.

Table Showing Daily and Monthly Mean Barometer at Indianapolis, Indiana, for Each Day and Month of the Year 1885, *as Recorded at the United States Signal Office.*

BAROMETER CORRECTED FOR ELEVATION, TEMPERATURE, GRAVITY AND INSTRUMENTAL ERROR.

DATE.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1 . . .	30.412	30.235	29.929	30.161	29.781	29.926	30.047	29.850	30.102	29.877	29.878	30.119
2 . . .	30.623	30.062	29.998	29.867	30.034	29.987	29.957	29.646	30.096	29.756	30.055	30.098
3 . . .	30.482	29.733	29.840	30.013	29.982	29.895	29.965	29.705	30.023	29.678	30.094	29.919
4 . . .	30.313	29.593	30.103	30.048	29.909	29.749	29.921	29.852	29.954	29.971	29.835	29.416
5 . . .	29.886	29.802	30.207	29.861	29.667	29.843	29.892	30.042	30.080	30.042	29.762	29.889
6 . . .	29.465	29.942	30.057	29.994	29.556	29.879	29.864	29.904	30.118	30.198	29.752	29.822
7 . . .	29.920	29.725	30.097	29.814	29.934	29.792	30.026	29.860	30.050	30.065	29.833	30.159
8 . . .	29.845	29.933	30.320	30.155	29.868	29.924	30.031	29.906	29.655	30.188	30.068	29.645
9 . . .	30.053	29.543	30.135	30.141	29.863	30.157	29.981	29.913	29.824	30.262	30.203	29.626
10 . . .	30.211	30.110	30.248	29.877	29.977	30.163	30.001	30.030	30.043	30.169	30.171	30.137
11 . . .	29.558	30.179	30.119	29.777	30.015	30.110	30.021	30.001	30.069	30.038	29.839	30.538
12 . . .	30.105	30.158	30.034	29.997	29.997	29.969	29.957	29.874	29.916	29.777	29.787	30.410
13 . . .	30.522	30.065	30.098	30.263	30.069	29.913	29.817	29.851	29.811	29.569	29.946	29.877
14 . . .	30.376	29.921	29.811	30.192	30.116	29.927	29.856	30.011	29.967	29.888	27.938	30.128
15 . . .	30.067	29.731	29.886	29.839	30.128	29.956	29.867	30.046	30.019	29.874	30.049	30.177
16 . . .	29.771	29.991	30.105	29.893	30.032	30.070	30.017	30.090	30.132	29.885	30.192	30.213
17 . . .	30.394	29 960	30.254	29.827	29.896	30.158	30.091	30.084	30.209	29.979	30.020	30.238
18 . . .	30.558	30.243	29.954	30.091	29.851	30.198	30.084	30.012	30.194	29.956	29.789	30.157
19 . . .	30.522	30.224	29.981	30.270	29.936	30.141	29.991	29.948	30.131	29.684	30.037	30.328
20 . . .	30.261	30.328	30.157	30.273	29.949	29.960	29.914	29.913	30.069	30.064	29.884	30.351
21 . . .	30.369	30.310	30.184	30.155	29.970	29.898	29.965	29.908	29.991	30.192	29.839	30.309
22 . . .	30.548	30.470	30.264	30.039	29.917	30.136	30.013	30.028	29.886	30.016	29.806	30.189
23 . . .	30.027	30.484	30.364	30.000	29.903	30.180	30.010	29.904	30.095	30.123	30.041	30.038
24 . . .	29.801	30.145	30.265	30.146	29.857	30.169	29.939	29.761	30.026	30.190	30.086	30.278
25 . . .	29.932	30.091	30.270	29.891	29.955	30.112	29.919	29.928	30.092	30.138	30.108	30.499
26 . . .	30.067	30.040	30.026	30.069	30.027	30.038	29.977	30.164	30.186	30.032	30.246	30.567
27 . . .	29.935	30.037	29.937	30.092	29.959	29.958	30.036	30.172	30.108	29.959	30 327	30.340
28 . . .	30.282	29.907	30.051	29.970	29.856	29.977	30.000	30.087	30.012	29.794	30.220	30.074
29 . . .	30.317	. . .	30.160	30.006	29.693	30.131	29.925	29.959	29.961	29.805	30.124	29.983
30 . . .	30.180	. . .	29.998	29.710	29.673	30.153	29.873	29.906	29.904	30.028	30.093	29.732
31 . . .	30.049	. . .	30.105	. . .	29.796	. . .	29.902	29.967	. . .	29.969	. . .	30.050

MONTHLY MEAN BAROMETER.

1885.	30.156	30.026	30.095	30.014	29.909	30.013	29.964	29.946	30.025	29.973	30.001	30.106

TABLE III.

DAILY AND MONTHLY MEAN TEMPERATURE.

Table Showing Daily and Monthly Mean Temperature at Indianapolis, Indiana, for Each Day and Month of the Year 1885, *as Recorded at the United States Signal Office.*

(Fahrenheit.)

DATE.	Jan.	Feb.	Mch.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1 . . .	9.6	24.7	34.9	51.5	51.7	66.9	63.9	78.5	58.1	67.0	40.9	39.1
2 . . .	11.8	28.0	34.1	56.3	45.5	73.1	68.3	71.8	57.6	64.6	36.1	39.6
3 . . .	24.2	42.2	41.9	34.8	48.4	73.1	72.9	69.3	65.2	54.4	40.0	36.5
4 . . .	31.7	37.3	35.9	39.6	56.3	73.8	74.8	73.3	63.5	43.3	50.3	39.8
5 . . .	39.3	23.8	34.0	56.6	61.5	65.9	75.6	68.7	58.8	50.5	55.9	20.2
6 . . .	42.4	23.1	35.1	59.4	57.1	71.5	71.2	68.7	57.3	45.3	61.9	18.4
7 . . .	35.4	36.9	30.5	61.4	42.8	79.7	74.7	75.5	62.4	46.4	56.0	9.6
8 . . .	44.2	29.4	24.1	37.1	46.9	60.4	78.7	78.5	69.4	45.4	41.3	37.5
9 . . .	38.6	22.3	36.1	37.2	42.6	57.2	73.6	81.1	58.5	47.8	38.1	33.4
10 . . .	33.6	−7.6	35.3	44.1	45.9	63.2	72.6	71.2	57.3	54.0	40.9	22.8
11 . . .	44.2	5.7	39.7	45.5	54.9	70.8	69.8	73.0	63.1	58.0	55.9	18.7
12 . . .	28.8	12.9	40.0	40.7	55.5	70.0	72.6	78.2	73.4	55.9	54.6	26.5
13 . . .	18.3	7.9	35.4	34.9	58.6	75.9	70.8	74.9	67.7	50.8	36.8	30.8
14 . . .	30.8	24.5	43.5	37.9	60.0	77.8	69.8	60.9	69.5	50.2	28.7	16.1
15 . . .	33.8	26.7	30.2	46.9	63.7	67.6	76.4	60.9	65.8	50.4	31.2	23.1
16 . . .	24.8	0.6	20.9	48.7	69.1	64.8	78.2	65.7	62.9	55.4	37.2	33.7
17 . . .	3.8	9.4	17.9	51.3	71.2	63.9	79.8	68.8	64.4	59.4	49.7	31.0
18 . . .	4.7	7.5	24.6	50.8	66.8	67.2	78.7	72.9	67.7	56.8	50.7	35.1
19 . . .	2.0	2.7	18.7	57.8	58.0	69.4	81.7	71.7	69.5	53.5	41.7	30.4
20 . . .	6.5	1.5	12.0	63.0	67.5	72.1	84.8	72.1	68.6	41.8	39.7	33.1
21 . . .	−1.5	6.9	18.5	67.5	66.1	68.8	82.9	78.0	67.6	38.2	39.8	44.0
22 . . .	2.2	10.3	17.4	69.5	67.7	57.3	76.4	70.2	61.2	48.4	35.0	49.1
23 . . .	24.4	17.5	24.4	70.6	69.1	62.3	78.7	78.7	48.8	44.9	35.5	48.1
24 . . .	33.7	28.1	35.5	54.9	74.0	69.2	80.1	77.0	58.7	46.6	34.4	34.6
25 . . .	23.7	33.4	33.9	55.6	68.0	72.0	80.3	60.7	67.3	49.1	35.9	29.1
26 . . .	7.7	34.4	46.3	54.4	69.0	76.5	76.6	56.6	68.1	55.2	35.6	26.5
27 . . .	8.4	36.3	46.0	57.7	65.4	75.3	76.4	56.7	68.1	57.4	35.2	31.3
28 . . .	1.4	45.7	38.0	50.3	67.8	73.1	80.8	60.1	67.8	50.4	37.7	35.7
29 . . .	18.8	. . .	36.1	53.1	68.9	63.2	81.9	66.7	64.9	44.2	38.4	40.9
30 . . .	36.6	. . .	47.1	57.6	64.9	61.8	80.7	66.9	63.8	37.5	41.3	42.7
31 . . .	35.3	. . .	53.3	. . .	68.5	. . .	80.4	62.1	. . .	40.0	. .	35.8

MONTHLY MEAN TEMPERATURE.

1885.	22.5	20.5	33.0	51.5	60.5	68.8	76.3	70.0	63.9	50.4	41.9	32.0

TABLE IV.

Table Showing the Highest and Lowest Temperature in Degrees (°Fahrenheit) at Indianapolis, Indiana, during each Month of the Years 1872 to 1885 inclusive, as Recorded at the Signal Office.

MONTH.	1872.		1873.		1874.		1875.		1876.		1877.		1878.		1879.		1880.		1881.		1882.		1883.		1884.		1885.	
	Highest.	Lowest.	Highest.	Lowest.	Highest.	Lowest.	Highest.	Lowest.	Highest.	Lowest.	Highest.	Lowest.	Highest.	Lowest.	Highest.	Lowest.	Highest.	Lowest.	Highest.	Lowest.	Highest.	Lowest.	Highest.	Lowest.	Highest.	Lowest.	Highest.	Lowest.
January . .	47	-6	60	-13	63	1	44	-18.5	69	9	58	-11	54	-2	57	-22	66	20	47	-6	61.5	7	45.0	-11.0	53.8	-25.0	51.7	-11.3
February. . . .	58	-4	63	1	59	17	55	-8	66	-3	63	20	61	18	58	-1	65	14	59	1	65	15	72.0	4.0	65.2	-1.6	59.0	-9.0
March	61	17	64	2	72	20	77	9	72	11	73	9	72	23	74	15	70	21	62	18	70.5	24	68.4	12.0	69.5	5.0	63.8	3.2
April.	83	32	81	32	71	27	79	19	77	29	80	28	80	35	82	21	83	27	78	20	80	24	85.3	30.4	80.5	31.4	78.3	27.8
May	84	43	86	47	89	40	88	34	86	33	88	31	81	35	87	36	85	40	89	44	80.5	37	82.8	35.0	84.0	40.6	87.7	35.3
June	93	56	94	62	96	50	91	51	91	51	89	45	91	50	91	47	91	54	92	48	94	45	89.0	50.0	92.8	54.7	90.1	41.1
July	95	65	91	60	97	58	92	63	63	61	90	54	96	58	96	58	93.5	55	101	57	89	53	92.0	56.8	90.0	55.2	94.5	47.5
August. . . .	96	51	95	61	95	56	87	51.5	89	48	89	57	92	53	93	53	94	51	101	55.5	90	52	91.0	53.0	89.0	50.2	95.1	47.7
September . . .	92	44	87	42	90	41	90	35	88	42	85	42	88	44	80	38	89	41	94.5	48	85	42	87.0	40.4	90.3	44.8	83.8	38.4
October	82	33	76	25	78	28	75	26	75	26	83	35	81	23	86	30.5	78	31	81	39	79	35.5	81.0	35.0	87.0	31.2	77.8	31.4
November . . .	62	-1	59	13	71	-2	61	14	73	18	61	9	65	25	75	18.5	63	-5	63	10	72	22	65.0	10.0	66.8	12.3	69.8	23.7
December . . .	48	-11	62	12	61	12	68	-1	47	-15	67	20	48	-12	64	5	56	-13	63	14	57	-10	62.0	9.0	60.7	-12.3	56.3	-2.1

*TABLE V.

Annual Means for the Years 1872 *to* 1885, *Arranged for Comparative Purposes, as Compiled from the Records of the Signal Office, at Indianapolis, Ind.*

YEAR.	Mean Barometer Reduced to Sea Level and Standard Gravity—Inches.	Mean Temperature—Degrees.	Mean Relative Humidity—Per Cent.	Maximum Temperature during the year—Degrees.	Minimum Temperature during the year—Degrees.	Prevailing Direction of Wind.	No. of Clear Days.	No. of Fair Days.	No. of Cloudy Days.	Average amount Cloudiness—Scale, 0-10.	No. of days on which 0.01 inch or more of Precipitation fell.	Total amount of Precipitation.	Greatest Precipitation in any 3 consecutive 8-hourly measurements—Inches and hundredths.	No. of days on which the Maximum Temperature was below freezing.	No. of days on which the Minimum Temperature was below freezing.	No. of days on which the Temperature was above 90°.
1872.	30.044	50.8	67.5	96.0	—11.0	SW.	85	142	139	5.0	122	34.07	3.71	49	120	17
1873.	30.004	52.0	69.2	95.0	—13.0	SW.	97	141	127	5.9	145	52.32	3.73	38	99	9
1874.	30.037	55.0	63.0	97.0	— 2.0	NW.	97	150	118	5.0	120	43.60	2.61	17	83	27
1875.	30.005	50.5	66.1	92.0	—18.5	W.	81	138	146	5.0	155	54.58	2.86	44	107	5
1876.	29.997	53.2	68.1	93.0	—15.0	W.	83	128	157	6.0	155	57.53	2.70	30	101	9
1877.	30.008	54.0	67.2	90.0	—11.0	SW.	98	141	126	5.0	139	39.08	2.07	20	84	
1878.	29.946	55.4	64.6	96.0	—12.0	SE.	84	159	122	6.0	118	38.62	2.03	17	68	13
1879.	30.036	53.9	64.4	96.0	—22.0	S.	94	135	136	5.0	122	42.88	2.33	27	96	12
1880.	30.030	51.4	65.4	94.0	—13.0	W.	106	145	115	5.0	123	50.99	2.00	26	19	9
1881.	30.024	54.9	67.4	101.0	— 6.0	SW.	100	140	125	5.0	112	48.74	4.30	28	91	31
1882.	30.045	53.8	71.1	94.0	—10.0	NW.	107	141	117	5.3	141	53.68	3.02	19	78	4
1883.	30.059	51.8	66.2	92.0	—11.0	SW.	96	157	111	5.4	164	54.12	3.71	35	106	6
1884.	30.044	52.5	67.6	92.8	—25.0	S.	99	144	123	5.6	159	39.99	2.16	40	91	5
1885.	30.019	49.3	73.9	95.1	—11.3	SW.	92	153	120	5.5	147	39.51	2.87	42	111	15

Verified and corrected at the Office of the Chief Signal Officer of the Army, Washington.

TABLE VI.

Table Showing Monthly Mean Barometer Reduced to Sea-Level (*and* 1885 *to Sea-Level and Standard Gravity*), *Temperature and Total Precipitation at Indianapolis, Ind., for Each Year, from* 1872 *to* 1885 *Inclusive, as Recorded at the Signal Office:*

MONTHLY MEAN BAROMETER (Inches).

MONTH.	1872.	1873.	1874.	1875.	1876.	1877.	1878.	1879.	1880.	1881.	1882.	1883.	1884.	1885.
January	30.130	30.056	30.120	30.232	30.107	30.160	30.022	30.151	30.026	30.136	30.159	30.162	30.188	30.156
February	30.008	30.044	30.099	30.129	30.070	30.156	29.917	30.112	30.049	30.092	30.101	30.283	30.060	30.026
March	30.043	30.030	30.044	29.999	29.982	30.013	29.912	30.073	30.059	29.824	30.088	30.057	30.040	30.095
April	29.960	29.896	30.016	29.964	29.978	29.898	29.746	29.969	29.946	29.963	30.027	29.965	29.948	30.014
May	29.988	29.895	29.940	29.922	29.963	29.992	29.904	29.951	29.974	29.967	29.955	29.940	29.956	29.909
June	29.976	29.905	29.925	29.948	29.881	29.907	29.896	29.954	29.947	29.906	29.907	29.931	30.009	30.013
July	29.964	29.982	29.954	29.935	29.957	29.931	29.912	29.927	29.957	29.995	30.012	30.012	29.918	29.964
August	30.032	30.013	29.952	29.945	30.001	29.926	29.876	29.951	29.976	30.005	29.981	30.050	30.034	29.946
September	29.997	30.032	30.020	30.020	29.954	29.997	30.050	30.081	30.033	30.017	30.067	30.043	30.052	30.025
October	30.095	30.062	30.093	29.999	29.972	29.983	30.028	30.108	30.062	30.130	30.034	30.090	30.153	29.973
November	30.112	30.010	30.116	30.037	29.990	30.038	30.010	30.078	30.207	30.163	30.177	30.161	30.131	30.001
December	30.218	30.125	30.165	29.936	30.109	30.097	30.082	30.086	30.124	30.170	30.152	30.136	30.156	30.106

TABLE VI—Continued.

MONTHLY MEAN TEMPERATURE IN DEGREES, FAHRENHEIT.

(Deduced from the three telegraphic observations.)

MONTH.	1872.	1873.	1874.	1875.	1876.	1877.	1878.	1879.	1880.	1881.	1882.	1883.	1884.	1885.
January	26.6	24.5	35.5	20.0	38.6	27.8	34.5	26.5	45.9	23.7	31.6	24.5	21.6	22.5
February	29.6	30.3	35.6	21.2	37.0	39.2	39.0	30.1	38.7	29.8	42.2	32.0	34.7	20.5
March	35.0	37.9	41.6	37.4	37.5	35.5	49.9	42.5	41.6	36.8	44.8	36.1	41.1	33.0
April	55.0	51.2	45.8	49.3	52.0	53.8	58 6	52.3	55.2	47.5	53.3	53.3	50.2	51.5
May	64.3	63.9	66.6	62.3	65.7	61.9	61.6	66.2	68.4	70.2	58.5	60.9	62.1	60.5
June	73.0	76.7	76.2	70.8	71.9	71.5	69.6	71.4	73.3	72.8	71.6	71.5	73.2	68.8
July	77.7	75.3	78.3	75.6	77.7	75.8	79.1	79.5	75.9	79.4	72.6	75.1	73.7	76.3
August	75.9	74.8	75.5	70.2	75.0	73.1	75.2	72.6	75.6	79.0	73.0	70.4	72.3	70.0
September	66.7	63.8	68.6	63.1	64.4	66.3	67.0	61.7	64.2	73.5	65.5	63.2	71.6	63.9
October	53.3	49.8	55.0	50.8	51.1	58.2	54.0	62.3	52.9	60.2	58.8	54.8	58.3	50.4
November	35.3	37.0	42.1	39.9	41.1	42.6	44.9	45.4	31.2	42.8	43.3	45.0	41.5	41.9
December	23.9	37.2	35.3	41.2	22.6	46.3	26.9	35.6	24.2	40.2	30.4	34.4	29.9	32.0

TOTAL PRECIPITATION, IN INCHES AND HUNDREDTHS.

January	1.17	4.50	3.75	1.01	5.94	1.56	2.38	1.47	6.32	2.10	3.74	1.32	1.05	3.31
February	1.41	2.85	4.17	1.88	4.49	1.21	2.10	2.17	3.16	6.43	7.28	7.19	4.73	1.54
March	1.31	3.90	5.79	5.23	7.44	5.23	1.23	3.36	4.03	4.01	6.11	3.25	3.01	0.82
April	3.26	5 91	4.44	1.29	2.27	3.11	5.51	2.25	6.43	2.60	3 68	2.73	2.89	5.28
May	3.22	3.89	4.03	5.13	5.11	2.09	3.24	3.38	8.22	3.78	7.65	4.02	4.80	3.66
June	3.28	3.70	5.25	12.20	7.54	6.21	2.25	2.94	8.48	3.92	9.35	4.59	4.11	5.74
July	11.00	11.28	3.53	13.12	7.48	4.19	4.54	2.40	2.26	0.82	3.43	6.12	6.03	1.43
August	2.69	1.32	2.90	3.66	5.86	4.13	2.42	5.71	2.67	0.97	4.51	2.48	0.46	5.82
September	2.81	1.76	2.09	1.34	3.85	2.04	3.35	6.94	1.86	3.25	0.72	2.72	3.09	3.50
October	1.07	5.27	0.36	2.67	4.42	3.22	4.78	1.34	3.54	6.11	2.18	8.56	2.31	3.25
November	0.80	2.55	4.82	3.04	2.26	3.64	2.87	5.82	2.58	9.35	2.50	6.80	1 46	2.71
December	2.10	5.90	2.79	4.01	0.90	2.45	3 95	5.10	1.44	5.40	2.53	4.34	6.05	2.45

ANNUAL REPORT.

The year 1885 may be recorded as the most productive in the history of the State. General good health has prevailed. No epidemic among live stock (except of a local nature). The most successful State Fair ever held, and peace and plenty abounds throughout the land, for all of which we are truly grateful.

To agriculture must be given full credit for its share in supplying the necessaries of life and assisting in the prosperity of mankind.

The growing season was ushered in by the most severe winter on record, which was beneficial in some respects, destroying the larvæ of insects and worms, and preventing the usual ravages from that source. The deep frost was not followed by the usual heavy spring rains. The ground never plowed up more mellow and of a finer tilth. There has never been less complaint of seed corn or other grain, excepting the growing wheat, (which was damaged by severe frost and ice), but yielded better than expected and of a good quality. The season continued favorable throughout with late pastures, and live stock went into winter quarters in excellent condition.

Agriculture embraces such a wide range of subjects that it would be difficult to treat on all in one book, therefore, we have endeavored to continue a series of articles in each annual report and avoid a repetition, thus creating a text-book, for what its name indicates. The weather reports are continued, as they have proven to be useful and no where else to be found in a published form.

The description of the State in a general way, also by counties, is thorough in the reports for 1882 and 1883. The drainage of the State is ably set forth in this volume by Prof. John L. Campbell, also in the statistical matter page 380 showing the wonderful extent of improvement in that direction.

The information given on many of the principal features of agriculture is of a practical nature by successful men, most of which can not be found in any other publication, and we are glad to know that such information is in demand and appreciated in the form as presented.

We have given more than usual attention herein to statistics of the principal products and show them in a comparative form. Statistics are useless unless comparative and in a condensed shape. In fact, often worse than useless in a crude form, as they have a tendency to lead astray. No two States or counties have the same areas, therefore giving the amount produced does not prove such territory the most productive or superior in quality; as was shown in our 1882 report. Indiana was classed third on the list by the National Agricultural Department as a wheat producing State, having a third less territory than neighboring States, but in the production of wheat to the square mile she is first on the list, while the State producing the most wheat was third on the list in production according to area. The counties producing the largest number of bushels of grain, do not, as a rule, figure in the list of best five counties to area as shown by statistics herewith submitted. Thus we have arranged to give each county its proper credit in whatever specialty it predominates without regard to its area or proportion in size with other counties. This feature is new, and will be appreciated by the smaller counties in the State that have not been properly represented.

We are under obligations to Hon. W. A. Peelle, Chief of Bureau of Statistics, for the courtesy of access to his papers and estimates from which we have compiled our tables. We also compile from the reports of the National Department a table showing the principal product price and acreage for ten years.

The condition of the Board of Agriculture financially and prospectively may be found in the President's address, and report of the Secretary to the Delegate Board of Agriculture at the annual meeting in January herewith included.

The State Industrial Associations, as branches of the Board of Agriculture holding regular sessions in the Agricultural rooms, continue to increase in interest and attendance. They are doing much to advance progressive agriculture.

Hon. John Sutherland, whose portrait engraving serves as the frontispiece, was a member of the Board of Agriculture seventeen years—1864 to 1881, inclusive, and President of the Board three years, including the first and second years of the Exposition enterprise. He also represented the Board of Agriculture as Trustee of Purdue University for six years.

We feel a pride in our calling as we compare notes. Agriculture is on the upward grade, and commands the respect and attention of the best men of the age. The coming man is sure to emphasize the fact when possible, that he is a farmer bred, and investigation proves that ninety per cent. of the leading men of the day are country born. The subject, "Agriculture as a Source of Prosperity," is so ably handled in an address by Col. J. B. Maynard, at the annual meeting of the Board, that we call special attention to it as found in this volume. Every farmer should read it.

Secretary.

STATE BOARD MEETINGS, 1885.

ORGANIZATION OF NEW BOARD.

AGRICULTURAL ROOMS,
JANUARY 8, 2 P. M.

A full Board was present, and proceeded immediately to the election of officers for the ensuing year, with the following result:

President	R. M. Lockhart, Dekalb county.
Vice President	Dick Jones, Bartholomew county.
Executive Committee	Messrs. Davidson, Mitchell, Dungan and Seward.
Secretary	Alex Heron.
Treasurer	Sylvester Johnson.
General Superintendent	Fielding Beeler.

The committee appointed to petition the Legislature to pay the bonded debt of the Board were instructed to take charge of the matter of asking for a $10,000 appropriation to maintain the State's exhibit at New Orleans. The salaries of the officers of the Board were made the same as 1884, and all unfinished business was referred to the February meeting.

Adjourned to February 10.

FEBRUARY MEETING.

The Board met, a quorum being present. A communication from Mr. Wappenhaus, Signal Service Observer, recommending the establishment of a State Signal Service Bureau, to cooperate with that of the General Government, was read and referred to Messrs. Hargrove, Seward and LaTourette.

A communication from Prof. H. W. Wiley, asking the Board to indorse N. J. Coleman for U. S. Commissioner of Agriculture in case of the removal of Dr. Loring, was tabled.

A communication from the National Cattle Growers' Association, of Chicago, asking the Board to become a member, was tabled.

Several communications regarding the premium list were referred to the Committee of the Whole.

A communication from Prof. R. B. Warder, concerning the analysis of fertilizers, was tabled.

The Secretary was authorized to purchase the coops belonging to the State Poultry Association.

By consent, Joseph H. Blake, of the Vigo County Agricultural Society, presented for the consideration of the Board the following proposed amendments to the "Acts for the Encouragement of Agriculture."

An act concerning licenses to vend foreign merchandise, for keeping a ferry, to exhibit for pay any caravan, menagerie, concert, theatrical performance or other exhibition, and to carry on the business of stock and exchange brokerage, the money arising therefrom to be paid over by the County Treasurer to the agricultural society of the county where collected, as the same may be received. Provided, that in counties where there are no agricultural societies organized the treasurer thereof shall pay the same thus collected into the county treasury. That in counties where there is an agricultural society organized under the law, such society shall have the right to fix the amount to be charged each exhibition for license, and the Board of Commissioners, if in session, shall make their order in conformity with the wishes of the officers of such society, and if not in session, the County Treasurer shall make the charge after consulting the wishes of such agricultural society. Providing, further, that no license shall be issued to any of the above described exhibitions at any time during the holding of a fair by such societies, except their (the societies') consent be first obtained.

Also, an act authorizing thirty (30) or more persons, residents of any county or district, embracing two or more counties of the State, shall organize themselves into a society for the improvement of agriculture within said county or district, and shall have adopted a constitution and by-laws, and shall have appointed the usual officers, and shall have raised and paid to their treasurer, by voluntary subsubscription or by fees imposed upon its members, any sum of money not less than fifty ($50) dollars, and whenever the president of such society shall certify to the respective county auditors the amount thus paid, attested by affidavit, it shall be the duty of said county auditors, embraced within the district in which such society shall be organized, to draw an order on the treasurers of their respective counties in favor of the president and treasurer of said society for whatever amount of funds there shall have been paid for licenses into such county treasury. Also, an act authorizing county and district societies to purchase and hold real estate not to exceed 100 acres, and issue capital stock not to exceed $20,000, in shares not to exceed $50, no one person being entitled to vote for officers in excess of ten shares, to be owned by him.

NOTE.—The above amendments to "Acts for the Encouragement of Agriculture" were embraced in House Bills Nos. 437, 438 and 440 of the last Legislature, and were reported back with the recommendation that they pass, in which condition they remain on the files in the State Librarian's office.—SECRETARY.

After some discussion the following resolution, by Mr. Seward, was adopted:

Resolved, That the Indiana State Board of Agriculture, after an examination of the proposed amendments submitted by Mr. Blake, regard the same as necessary to enlarge the facilities of agricultural societies of the State, and we cheerfully recommend the same to the consideration of the General Assembly, and request our members to use all their efforts to procure the passage of said acts.

Mr. Hargrove, from special committee, reported the following, which was concurred in:

Your committee to whom was referred the communication requesting the establishment of a State signal service bureau, find that there is already such a bureau established and in operation at Purdue University, and we recommend favoring and sustaining the same as far as it lies in our power.

The motion of Mr. Mitchell, suggesting that the Board hold a fat stock show during the fall of 1885, was deemed inexpedient. Ten thousand dollars was appropriated to be offered as premiums.

WEDNESDAY, FEBRUARY 11.

Board met, and in Committee of the Whole, occupied the morning session revising the premium list.

During the afternoon session a communication was received from the Woman's Industrial Association, through their President, Mrs. A. M. Noe, asking that they be given entire charge of the allotment of space and award of premiums on articles displayed on the second floor of the Exposition Hall at the next State Fair, and that one thousand dollars be allowed this department alone.

Messrs. Seward, Mitchell and Boggs were appointed as a committee to confer with the Executive Committee of the Woman's Industrial Association relative to their wants.

A resolution, by Mr. Greer, requesting the General Assembly to pass House bill 295, relative to the collection of the dog tax, and placing it as a county instead of a township fund for the payment of losses sustained by sheep owners through the ravages of dogs, was adopted.

Adjourned.

THURSDAY, FEBRUARY 12.

Board met, and the President announced the following Superintendents of Departments:

Horse Department—S. W. Dungan and E. H. Peed.
Speed Ring—E. H. Peed.
Cattle Department—Jasper N. Davidson and J. M. Boggs.
Hog Department—Dick Jones.
Sheep Department—J. Q. A. Sieg.
Poultry Department—John Ratliff.
Farm and Garden Products—H. LaTourette.
Horticultural Department—L. B. Custer.
Mechanical Department—Robert Mitchell and W. A. Greer.
Carriages and Wagons—J. M. Graham.
Upper Floor—Women's State Fair Association.
Geology and Natural History—Prof. J. Maurice Thompson, State Geologist.
Power Hall—W. B. Seward.
Gates—S. Hargrove.
Amphitheater—W. A. Banks.
Spacing in Exposition Building (*Lower Floor*)—Chas. A. Howland and W. A. Banks.
Committee on Reception—Messrs. Lockhart, Mitchell, LaTourette and Boggs.
Committee on Pedigrees—Messrs. Banks, Dungan, Peed, Graham and Ratliff.

STANDING COMMITTEES.

Rules and Regulations—L. B. Custer and J. M. Graham.
Unfinished Business—Samuel Hargrove and E. H. Peed.
Premium List—John Ratliff, J. M. Boggs and W. A. Banks.
Credentials—Dick Jones and W. A. Greer.
Fair Grounds—H. LaTourette and J. Q. A. Sieg.

The Executive Committee to act as the Committee on Finance.

The allotment of committeemen on awards was also announced by the chair.

Mr. Seward, from the committee to confer with the Woman's Industrial Association, reported, recommending that $1,000 be allowed to cover all premiums offered in the Ladies' Department. The report was adopted.

Pursuant to the recommendations contained in the report of the Committee of the Whole Board on the Revision of the Premium List, a reduction of ten per cent. on all premiums was ordered.

Adjourned to meet at the Fair Grounds on Monday, September 28.

EXECUTIVE COMMITTEE MEETINGS.

June 5, 10 A. M.

The committee met on call of the President. All members present.

The General Superintendent was authorized to dispose of the boilers and boiler house on the Fair Grounds, and to make certain needed repairs.

The Secretary was instructed to have printed 5,000 lithograph posters.

Mr. Seward and the Secretary were authorized to contract for advertising for the State Fair.

It was ordered that the cost of lithograph posters should not exceed $450.

A vote of thanks was tendered retiring State Geologist Prof. John Collett for the uniform kindness and interest manifested in the welfare of the members of the Board.

Adjourned.

AUGUST 12, 10 A. M.

President Lockhart called the committee to order, all members answering to the call.

The proposition of the Amazonian Cadets, of Chicago, to give drills during the fair was tabled.

A proposition to build an iron bridge across the State Ditch in the Fair Grounds, at actual cost, was disposed of in like manner.

Mr. Lewis Metesser, agent of the New Orleans Exposition, made a statement of the prospects for an exhibition the coming season, and urged that the Board suggest to Governor Gray the name of a suitable person to represent Indiana as State Commissioner.

Mr. Chas. Howland was authorized to attend to the awarding of space to exhibitors on the lower floor of the Exposition Hall.

The Secretary was instructed to notify the Wier Plow Company that their lease expires on the 23d, and that after that date the grounds would be wanted.

Mr. Seward and the Secretary were authorized to contract for the State Fair printing.

A premium of $175 was offered for the best drilled company, composed of not less than sixteen ladies, to drill with brooms, flags or fans.

Complimentary tickets were ordered to be furnished to the surviving members of the Legislature of 1851 and '52.

The poster for 1882 was adopted as the one to be used during 1885, and 10,000 copies ordered printed.

Adjourned.

SEPTEMBER MEETING.

SEPTEMBER 28, 10 A. M.

The Board met, with President Lockhart in the chair.

Members bringing committeemen for service were instructed to certify their (the committeemen's) time to the Secretary for payment.

The Secretary was instructed to issue to the Department Superintendents tickets for exhibitors who, in their opinion, were entitled to the same.

Messrs. S. J. and J. D. Tomlinson were appointed reporters on special merits, and Prof. R. T. Brown, Mr. Mitchell and C. E. Merrifield were appointed in the same capacity for the Mechanical Department.

The Awarding Committees in the several departments were chosen and instructed to proceed with their work.

Adjourned.

SEPTEMBER 29, 10 A. M.

Board met with a full representation, President Lockhart in the chair.

It was ordered that complimentary tickets admit holders to all the privileges of the Fair Grounds within the jurisdiction of the Board.

An informal meeting was held in the afternoon and various matters presented and discussed, after which the Board adjourned.

SEPTEMBER 30, 9 A. M.

Board met. It was ordered that the Exposition Hall be kept open for visitors on Thursday and Friday evenings, and that an admission fee of twenty-five cents be charged on those evenings.

Messrs. Mitchell, Ratliff and LaTourette were appointed a special committee to examine the handsome display of grasses, grains and wools exhibited by Wm. Sigerson, of Pulaski County.

A motion was carried fixing the pay of committeemen in all departments at $2 per day and actual railroad fare paid by them.

Adjourned.

OCTOBER 1, 3 P. M.

Board met and the committee to whom was referred the display of grasses, etc., by Mr. Sigerson, reported that the gentleman had at considerable expense and with unusual taste placed on exhibition in the main hall an interesting display consisting of 8 varieties of wheat, 4 varieties of oats, 3 varieties of rye, 8 varieties of corn, 5 varieties of tame grasses, 5 varieties of sugar millet, 20 varieties of native wild grasses, 1 variety of tansy, 3 varieties long wool, 4 varieties middle wool, 3 varieties of fine wool and 1 variety of cashmere goat, and recommend that he be awarded a premium of $50 and a diploma. The report was adopted.

In consideration of the unfavorable weather and at the solicitation of exhibitors, it was decided to keep the building open on Saturday and to charge an admission of 25 cents.

The Secretary was directed to invite, through the press, all ex-members of the Board of Agriculture to meet with the Board on the afternoon of October 2.

It was ordered that no live stock be allowed to be removed from the grounds unless it was absolutely necessary to meet other fair engagements.

Adjourned.

OCTOBER 2, 9:30 A. M.

Board met, a quorum being present.

The Secretary was instructed to commence paying premium orders at 9 o'clock, October 3.

It was decided that hull-less oats could not compete against the ordinary grain for premiums.

Mr. Joel E. Thompson, of Waterloo, Dekalb County, was designated to represent the Board as delegate to the National Butter, Cheese and Egg Association, to be held at Chicago, November 10 to 14.

The remainder of the session was taken up in allowing the bills of committeemen on awards, assistant superintendents, and others employed about the buildings and on the Fair Grounds.

OCTOBER 3, 9:30 A. M.

Board met. The Little Rock and Ft. Smith Railroad was awarded a diploma on their display.

Mr. Seward was authorized to recount the tickets, and, if necessary to employ assistants to make the count.

A number of bills were allowed, after which a motion was carried referring all unfinished business to the Executive Committee, and the Board adjourned.

EXECUTIVE COMMITTEE MEETING.

AGRICULTURAL ROOMS,
NOVEMBER 13.

The committee met on call of the President. Present: Messrs. Lockhart, Mitchell, Seward and Davidson.

Bills were allowed Treasurer Johnson for ticket sellers.

Messrs. Lockhart and Mitchell were appointed to represent the Board at Chicago as to the time of holding fairs, and Messrs. Mitchell and Davidson were appointed to attend the meeting at South Bend of the Ohio, Michigan and Indiana circuit as delegates.

The Secretary and Treasurer were instructed to notify the holders of the State Board bonds that $8,000 of bonds will be cancelled when the next semi-annual interest is due, January 15, 1886.

The programme for the annual meeting was discussed and the Secretary ordered to have printed 1,000 copies.

Several corrections in the award of premiums were made, and the Secretary instructed to pay the same to the rightful owners.

The financial report of the Secretary up to and including October 31 was received and indorsed.

Adjourned.

ANNUAL MEETING, 1886.

AGRICULTURAL ROOMS,
JANUARY 5, 10:30 A. M.

The Delegate State Board of Agriculture met with President Lockhart in the chair. The roll call of members showed present:

1st District—ROBERT MITCHELL, Princeton, Gibson County.
2d District—SAMUEL HARGROVE, Union, Pike County.
3d District—J. Q. A. SIEG, Corydon, Harrison County.
4th District—W. B. SEWARD, Bloomington, Monroe County.
5th District—WILL A. GREER, Aurora, Dearborn County.
6th District—DICK JONES, Columbus, Bartholomew County.
7th District—E. H. PEED, New Castle, Henry County.
8th District—S. W. DUNGAN, Franklin, Johnson County.
9th District—H. LATOURETTE, Covington, Fountain County.
10th District—JASPER N. DAVIDSON, Whitesville, Montgomery County.
11th District—JOHN M. GRAHAM, Muncie, Delaware County.
12th District—JOHN M. BOGGS, Lafayette, Tippecanoe County.
13th District—JOHN RATLIFF, Marion, Grant County.
14th District—L. B. CUSTER, Logansport, Cass County.
15th District—W. A. BANKS, Door Village, Laporte County.
16th District—R. M. LOCKHART, Waterloo, Dekalb County.

Of delegates present:

LIST OF DELEGATES.

COUNTY.	NAME.	POST OFFICE.
Bartholomew, Agricultural	Dick Jones	Columbus.
Bartholomew, Industrial	S. R. Quick	Columbus.
Blackford	N. W. Atkinson	Hartford City.
Boone	John W. Kise	Lebanon.
Cass	George Zinn	Logansport.
Clark	D. F. Willey	Charlestown.
Clinton	James McDavis	Mulberry.
Decatur	William Cumback	Greensburg.
Delaware	John M. Graham	Muncie.
Fulton	E. T. Reed	Tiosa.
Gibson	W. M. Cochrane	Oakland.
Grant	John Ratliff	Marion.
Hamilton	S. M. Smith	Westfield.
Hancock	K. T. White	Maple Valley.
Harrison	John W. Marshall	Corydon.
Henry	J. P. Nicholson	New Castle.
Huntington	Robert Simonton	Huntington.
Jasper	D. H. Yeoman	Rensselaer.
Jay	L. L. Gilpin	Portland.
Jennings	J. B. Smith	Queensville.
Knox	W. W. Berry	Vincennes.
Lagrange	Moses Balyeat	Lagrange.
Laporte	D. P. Grover	Kingsbury.
Marion	Sylvester Johnson	Irvington.
Monroe	Samuel Dinsmore	Bloomington.
Montgomery	F. L. Snyder	Crawfordsville.
Newton	J. W. Whiteman	Iroquois, Ill.
Noble	J. C. Zimmerman	Ligonier.
Parke	R. C. McWilliams	Rockville.
Pike	S. Hargrove	Petersburg.
Putnam	J. W. Robe	Greencastle.
Randolph	John R. Frazier	Winchester.
Ripley	W. G. Holland	Osgood.
Rush	Allen Hinchman	Glenwood.
Steuben	F. Macartney	Angola.
Sullivan	Uriah Coulson	Sullivan.
Tippecanoe	Albert Henderson	Lafayette
Tipton	Wm. Barlow	Tipton.
Vigo	W. P. Ijams	Terre Haute.
Wabash	C. King	Puckerbrush.
Warren	W. H. Goodwine	West Lebanon.
Warrick	Gurley Taylor	Boonville.
Wayne	J. C. Stevens	Centerville.
Whitley	I. B. McDonald	Columbia City.

The district societies showed present:

DISTRICT.	DELEGATE.	POST OFFICE.
Acton	J. E. McGaughey	Galladett.
Bridgeton Union	Dempsey Seybold	Perth, Clay Co.
Fountain, Warren and Vermillion	H. LaTourette	Covington.
Knightstown Union	John W. Walker	Greenfield.
Loogootee	Thomas Walter	Loogootee.
Miami and Fulton	J. A. McClung	Wagoner.
N. Ind. and S. Mich.	Samuel Bowman	South Bend.
Wayne, Henry and Randolph,	B. B. Beeson	Dalton.
Northeastern	John Buchanan	Corunna.
Plainfield	Daniel Cox	Cartersburg.
Southeastern Ind	W. A. Greer	Aurora.
Switzerland and Ohio	Jas. A. Hickman	Patriot.
Wells and Blackford	Wm. J. Bugh	Hartford City.
Warren Tri-County	Jonas Goode	Warren.
Eastern Ind.	Wm. Bunyan	Kendallville.
Lawrence	A. A. Johnson	Lawrence.
Urmyville	J. Tillson	Franklin.

The State associations were represented by:

ASSOCIATION.	DELEGATE.	POST OFFICE.
Women's Industrial	Mrs. A. M. Noe	Indianapolis.
State Horticultural	S. Johnson	Irvington.
Purdue University	Prof. J. H. Smart	Lafayette.
Short Horn Breeders	Robert Mitchell	Princeton.
Wool Growers	Thos. Nelson	Bloomingdale.
Bee Keepers	I. N. Cotton	Traders Point.

DISCUSSION.

Mr. McDonald. I am of the opinion that the business of this convention could be transacted in less time than three days. It is not convenient for all of us who live remote from Indianapolis to remain so long in order to vote for members for the coming year. We should be practical and transact the business of this convention in the least time possible, and with the least expense. I have nothing against Indianapolis. I know it is pleasant for the people here to meet with the people from remote portions of the State in convention like this for three days or more, but

I insist that this work can be done in two days, and in saying this, I voice the sentiment of Northern and Eastern Indiana. What can be done practically should be done quickly. I presume this can not be changed now, but it is a matter for the Executive Committee to consider. I believe that nine-tenths of you will agree with me on this subject. Men succeed in the world more by being practical than theoretical.

Mr. Mitchell. The gentleman's remarks are practical in one sense, and in another not so much. This Board has a right to set aside any part of the programme, and say when it will vote for members. There was a higher object in view than simply meeting and electing officers. The Executive Committee presumed it would take more than two days to discuss these important agricultural subjects on the programme. A few years ago, Governor Porter said the farmers should come here and spend a week at least, discussing these subjects. If this meeting thinks the programme is too long, it can dispense with the reading of some of the papers.

Mr. Lockhart. When the Executive Committee prepared this programme, I was favorable to passing the election until Thursday, hoping that it would make the work of the convention more useful throughout the State. We have many papers to present that will be of interest. As soon as the election is over, many will return home at once and make a slim meeting. This convention has a right to say what the programme shall be.

Following the above discussion, Messrs. Graham, Greer, LaTourette, McCartney and Berry were appointed on credentials.

It was ordered that nominations for members be made at 4 P. M., and that the election take place to-morrow.

Messrs. I. B. McDonald, Will Cumback and Thomas Nelson were appointed as the committee to award the premiums on grain displayed in the Board rooms, after which the delegates took a recess to view the new State House in course of construction.

At 1:30 P. M. the Board was again called to order.

The following counties, with no societies and societies supposed to be out of existence, were ordered stricken from the roll: Dekalb, Benton, Floyd, Fountain, Johnson, Ohio, Scott, St. Joseph, Switzerland, Russellville Union and Thorntown Union.

The President announced the following Standing Committees: On Finance—Messrs. Davidson, Seward, Dungan, Willey, Grover and Zimmerman; on Rules and Regulations—Messrs. Ratliff, LaTourette, Banks, McWilliams, Seybold and Walter; on Fair Grounds—Messrs. Mitchell, Sieg, Hargrove, Atkinson, Zinn, Robe and Hinchman; on Premiums—Messrs. Boggs, Jones, Peed, McClung, Beeson and Bugh; on Unfinished Business—Messrs. Custer, Ratliff, Peed, Bunyan, Tillson and Smith.

President Lockhart then delivered his annual address:

PRESIDENT'S ADDRESS.

Gentlemen of the Delegate State Board of Agriculture:

In compliance with the usual custom of those elected to the honorable and responsible position of President of the Board, it becomes my duty, as well as a pleasure, to present to you at this time a brief review of the work done by the Board during the past year.

A kind Providence has seen fit to smile upon us, and the health of our people throughout the State has been unusually good. No epidemic disease has prevailed during the year, as was predicted and feared a year ago; neither has the State been inundated with floods, and property destroyed, as was the case in former years. 'Tis true that in some portions of the State the heavy and late rains of the spring interfered much with the farm work, and in some parts caused a shortage in the crops, and the exceedingly cold weather of last winter destroyed a large acreage of the wheat crop in the southern and central portions of the State; but, with all of these drawbacks, the crop of 1885 will compare favorably with that of any other past year, and the farmers of our State have great reason to be thankful.

The past year's work has been most gratifying to the members of the Board. The opening days of the fair were anything but encouraging, on account of rain for three days. It was feared by many that we were to meet with a failure, financially, as did some of our neighboring States, but it was decreed otherwise, and the close of the week showed that we had held one of the most successful fairs ever held in the State. The amount of money received at our gates would have been much larger had it not been for the fact that large numbers of people from the southern and western portions of the State who intended visiting the fair were prevented from so doing by the rain storms prevailing there. Some of the railroads intending to run excursion trains to the fair abandoned the idea on that account.

Allow me to say to those of you that have never given the affairs of our State Board of Agriculture much consideration, that the present financial condition of our Board is very gratifying indeed, compared with the first year that I had the honor of becoming one of its members. The debt was then in excess of $80,000, $60,000 of the amount bearing interest at 10 per cent. per annum, making it necessary to provide for at least $6,000 per year to pay interest alone. You will notice from the report of your Secretary and Treasurer that when the bonds are taken up which we have notified the holders to present, and for the payment of which we have the money now in bank, there will remain only $32,000 of bonds outstanding, with the interest reduced to 6 per cent., requiring only $1,920 per year as against $6,000 heretofore, leaving over $4,000 in our Treasurer's hands.

I think, from this statement, each one of you will agree with me that the Board of Agriculture of the great State of Indiana is surely on the high road to prosperity. But some of you may say that in these years that have passed the State has been called on to assist the Board in its finances. That is true, and in answer I beg leave to say that the aggregate amount of all the money drawn from the State Treasury in the past twelve years is not equal to the amount granted for one single year to either one of four of our neighboring States of Ohio, Michigan, Wisconsin or Iowa for the promotion of the interests of agriculture by the Legislatures of these States.

It is hardly necessary for me to call your attention to the magnitude of the work involved in an effort to promote the advancement of agriculture, horticulture, stock raising, manufactures, dairying, domestic arts, etc., in a State that ranks among the first in the Union. The rapid strides forward in the development of our resources in this direction each year in this State are realized but by a very few of our people.

(Quoting from Prof. Babbitt, Secretary of the Wisconsin Society): "Agriculture is, and for all time to come must continue to be, the *most important industry* of the State." Not only as furnishing employment to the greatest number of individuals, and utilizing in the aggregate the largest amount of capital, but upon its success depends very largely the success of all other industries. Whatever, therefore, the State can do in disseminating information in regard to the results of improved processes in agriculture, and to the relative profits derived from the different branches of this industry, it is not only proper, but important, that it should do so.

The State Board of Agriculture was organized to assist in the accomplishment of these purposes, and has rendered most efficient service in this direction. Daniel Webster said truthfully: "Agriculture feeds us; to a great extent it clothes us; without it we could not have manufactories, we would not have commerce; these all stand together, but they stand like pillars in a cluster, the largest in the center, and that largest *agriculture.*"

The State Board of Agriculture has kept steadily in view the sentiments so truthfully uttered, and has striven as best it could to advance the agricultural, manufacturing and other interests of the State. To-day we can point with pride to the grand homes of farmers all over our State; the fine stables of thoroughbred horses; the grand herds of cattle, sheep and hogs, second to no other State in the Union, and last, but by no means the least in importance, we can boast that Indiana has within her boundaries some of the largest manufacturing establishments in the world.

We believe that the holding of our annual State Fair has had a great deal to do in bringing about this state of affairs, by the encouragement it has given to the production of better stock and machinery from year to year.

It is a well-known fact to every one who has attended our annual fairs that our grounds are entirely too small to accommodate the exhibitors and visitors. The Board has endeavored to utilize every foot of space, but find it utterly impossible to grant the requests that are made on them by exhibitors for more exhibition room. There might be additional grounds secured immediately north of and adjoining the present Fair Grounds, but there are several reasons to be urged against this purchase. In the first place the Board is not financially able to purchase additional grounds, and could not do so without assistance rendered by the State. In the second place, if additional ground could be procured it is not at all probable that a steam railway could ever be got into these grounds, as the city objects to the location of a railway across any of the streets in that portion of the city, claiming that, on account of that portion of the city being occupied exclusively by family residences, no steam railway should be allowed to interfere with their rights.

It is an admitted fact that in order to make a State Fair a success it should be located on the line of some railway that could take to its grounds heavy machinery and stock, and unload the same without additional expense to the exhibitors of loading on drays and transfer wagons. Many of the largest exhibitors decline to visit our fairs on this account, fearing damage to their stock and machinery in carting to and from the grounds. In addition to this, the advantage of getting large crowds of people to and from the grounds in a reasonable time, which can not be accomplished even by the best-managed street railway. I think I can see a solution to this question. Taking it for granted that our present grounds are too small, and in order that we may continue to make our State Fairs what they were designed to be by the Legislature that created the State Board of Agriculture, I take the liberty to suggest that the State of Indiana owns to-day in the city of Indianapolis a piece of land that is not used for any particular purpose, that could be made available. The land referred to lies near or adjoining the Deaf and Dumb Asylum, in the eastern part of the city. It has several railroads and street car lines running to it, and would make a good location for the State Fair for all time to come. I believe if the proper steps are taken this ground can be procured from the State by the State Board on a long lease; and, in the event of securing this location, the most of the buildings now on our grounds could be taken down and removed there without great cost or much damage. The present ground could be sold, the indebtedness paid off, and the Board be enabled to start out on a new lease of life, and in time be able to do a great deal of good to every interest in the State.

The exhibition of stock of all kinds at our last fair was not excelled and perhaps never equaled at any of our former fairs. Several of the herds shown had taken the entire rounds of the fairs in the Ohio, Michigan and Indiana circuit, going from here to the great St. Louis Fair, where there are so many fine horses and cattle shown in the different rings. It is very difficult for the Board to find judges that will do entire justice to every exhibitor. I think the time will soon come when all of our large fairs will see the importance of classing each distinct breed of horses, cattle, sheep and hogs in a class by themselves; then arrange a scale of points by which each is to be judged and select for judges only those that are known to be experts on respective breeds. Some may say that this plan will never work; that it will be so expensive that the different fairs can not afford to introduce this system of doing business. I do not believe that is so. If men come to our fairs to show their stock simply for the money they expect to draw in premiums from our treasury, then I say the sooner some plan is adopted to shut off that class of exhibitors the better it will be for us. But if the object of the exhibitor is to show the fine stock he is eagaged in raising, and caring more for his reputation as a breeder than for the small amount of premium money at stake, then I say it is unfair to him to place a man on the committee to judge his stock that perhaps knows nothing about the points that go to make up a first-class animal. I am glad to know that the complaints at our last fair of unfair judgment were very few indeed.

Although compelled to admit the cramped condition of our grounds, yet we are able to claim the best arranged stabling and pens that can be found at any of the State fairs, so that exhibitors of the finest and most valuable animals do not hesitate to bring them to our grounds.

The management has endeavored to allow nothing on the fair grounds that would not contribute to the legitimate object of the exhibition; confining the show exclusively to such matters as would have a tendency to advance agriculture and manufactures, and, with this object in view, we have excluded side shows, cheap auctions and all games of chance which have a tendency to detract the attention of visitors from the legitimate objects of the fair and to annoy, demoralize, deceive and swindle those that come in contact with them. At no former fair were there so many fine animals shown in all of the live stock departments, many coming direct from England, Scotland, France and Canada to compete for the prizes with stock raised in our own State. The reports of our Department Superintendents will no doubt show you the advances that are being made in each department from year to year.

The very large number of exhibits in each of these departments made the work of the Superintendents very arduous and I wish to return to each one of them my thanks for the able manner in which they discharged their duties, having given no exhibitor cause to complain of any inattention on their part. The Woman's Department of our State Fair has been so successfully managed from its first organization up to the close of the fair of 1884 that the Board felt that justice to the ladies demanded that they should be given more space in the Exposition Building. Consequently, at our last annual meeting it was decided to allow them *absolute control* of the entire upper floor. I well remember that the words *absolute control* sounded harshly on the ears of our members who were not yet educated up to that point that would permit them to acknowledge that woman's management was equal to that of the sterner sex. But at the close of our last Fair no member could be found that was not perfectly willing to give the ladies the praise that was justly due them for the very able and efficient management of their department.

We are proud of the fact that Indiana alone of all the States in this Union has its Woman's State Fair Association, officered and managed by themselves. The exhibit made by them at our last State Fair would of itself have been sufficient to have attracted people from all parts of the State. On behalf of the Board of Agriculture I tender to them our thanks for the able assistance they have given us from year to year in making our Fair a grand success.

I believe I would not be doing justice did I not say a word in relation to the business men of this city that have from year to year given us their aid in making up our display. Some of them have gone to large expense in fitting up their displays, and it is hoped that many others engaged in business in the city may see the great benefits that may be reaped by their assisting to make the annual State Fair the grand attraction it should be.

The city press gave us a very hearty and generous support during the past year. We recognize the fact that without the support of the press it would be impossible for us to make our Fair a success, as it is the medium through which we reach the general public. The Board endeavored to so conduct the work of the year as to meet the approval of every one that felt an interest in our welfare, and we are indeed glad to know that it was done in such a way as to meet with no unfriendly criticisms on the part of the press of the city. The press throughout the State are also entitled to our thanks for the many favorable notices given us.

The Board is also under many obligations to the management of the different lines of railway centering in this city for their efforts to accommodate us by bringing visitors at reduced rates, not only to our Fair, but also to all other meetings in which the Board is interested.

We are also under obligations to the management of the street railway of this city for accommodations and courtesies received, and believe no other city can boast of having a better managed or more accommodating street-car company.

The meetings of the different Industrial Associations of the State held in this room within the past year were well attended, and we are glad to be able to say that in them the State Board finds grand helpers in their work. There are many valuable addresses delivered on the different subjects under discussion, and these find their way to the view of many that are unable to attend the meetings by becoming a part of the Annual Reports of this Board. We are also under many obligations to our worthy Governor for his kindness in meeting with us on many occasions, and in giving our work his hearty and cordial support. I believe it has also been a pleasure to him to have the privilege of meeting from time to time with many of those that are known and recognized as the leaders in the different enterprises that have gone so far towards making Indiana one of the leading States in the Union. It is also gratifying to the men and women engaged in this great work to know that the Governor of the State feels enough interest in it to give his presence and encouragement to it. In their behalf I return him our thanks for the support he has given us.

Before closing, I wish to call your attention to the fine class of buildings that are being erected on our Fair Grounds by the leading manufacturers of farm machinery of our State, at their own expense. This shows conclusively the great importance of our annual fairs to the manufacturing interests of our State.

The annual reports of the Board, as prepared by Secretary Heron, and published each year, have received a great deal of praise from the press all over the country. I do not believe they have been excelled by the published reports of any other State for valuable information, and this Board feels highly honored in having such a competent Secretary.

To each officer and member of the Board I wish to tender my grateful thanks. First, for the high honor you conferred on me at the commencement of the year's work in selecting me to preside over your deliberations, and for the able manner in which every one has discharged the duties that were imposed upon him. Permit me to say, in justice to each one of you, that no President, since the Board was first organized, ever entered on a year's work with a better class of assistants than I have had with me the past year. I think I made no mistake in the choice of Superintendents for the several departments. I found no drones among you. Each did his work to the entire satisfaction of every exhibitor in his department.

I wish it distinctly understood that no credit is due to myself more than to each of my fellow members of the State Board for making our last fair one of the grandest exhibitions of Indiana's great wealth, of which every Indianian may well feel proud. I close my address by wishing all that are with us at this meeting a happy and prosperous year and hoping that the good work that has been done in the past may be an incentive to those that are to follow us, to try in the management of our annual fairs to make them still better.

The above was referred to a special committee, consisting of Messrs. Cumback, Mitchell and Nelson.

Following the President's address was presented the annual

REPORT OF THE SECRETARY.

AGRICULTURAL ROOMS, December 31, 1885.

Gentlemen: I have the honor to submit herewith the annual report and financial exhibit of the business of the Indiana State Board of Agriculture for the year ending December 31, 1885:

FINANCIAL EXHIBIT.

Total receipts from all sources	$36,703 99

EXPENDITURES.

General cash orders	$15,016 47	
Premium orders	9,003 50	
		$24,019 97
December 31, balance in Treasury		12,684 02
Total		$36,703 99

ITEMIZED RECEIPTS.

January 1, cash in Treasury	$7,009 17	
Notes and interest	1,478 91	
		$8,488 08
Annual appropriation		1,500 00
Regular tickets sold: at 50 cents, $17,579; at 25 cents, $1,491; at 10 cents, $695	$19,766 05	
Railroad coupons	1,472 00	
		$21,238 05
Entry fees: speed, $633.50; dogs, $43.50		677 00
Rents of stalls and pens	$1,149 35	
Rents of grounds and buildings	1,174 75	
		$2,324 10
Privileges sold at fair		2,316 96
Sale of shafting	$84 80	
Sale of pumps	75 00	
		$159 80
Total		$36,703 99

Statement showing distribution of expenses:

GENERAL EXPENSES.

Members' per diem	$1,621 80	
Salaries of Secretary, Treasurer and General Superintendent	1,416 65	
Advertising and printing	1,331 73	
Postage and stationery	257 70	
Express, telegrams, badges, moving, etc	219 41	
Water rents	200 00	
Janitor, tools, hose, etc	280 20	
Insurance	269 75	
Claims of previous years	340 00	
Interest on bonds	2,400 00	
Total		$8,337 24

CONSTRUCTION AND REPAIRS.

Lumber	$894 54	
Labor	563 16	
Piping, including pump and fountain	215 58	
Roofing	227 44	
Hardware	111 01	
Whitewashing	150 00	
Painting and signs	47 66	
Repairing in hall and coops	164 50	
Total		$2,373 89

CURRENT EXPENSES STATE FAIR.

Gate-keepers	$259 75	
Police	608 80	
Ticket-sellers	203 50	
Labor, care-takers, etc	347 93	
Assistant Superintendents	245 25	
Awarding committees	542 55	
Straw and sawdust	326 45	
Fuel	4 50	
Gas	111 60	
Music	208 00	
Ribbon	9 50	
Rents, show cases and fruit-plates	67 83	
Drayage, express, sprinkling, etc	121 30	
Closets	35 00	
Rebates	579 65	
Woman's Department	615 78	
Dog show	17 95	
Total		$4,305 34

PREMIUM AWARDS.

Horses, mules, etc	$3,208 50	
Cattle	1,915 00	
Hogs	739 00	
Sheep	587 00	
Poultry	313 00	
Dogs	89 00	
Total live stock		$6,851 50

Agriculture, grain, etc	$440 00	
Horticulture, fruit and flowers	750 00	
Geology, natural history, etc	129 00	
Total		$1,319 00
Woman's and Childrens' Department		833 00
Total amount of premium awards		$9,003 50

RECAPITULATION.

General expenses	$8,337 24	
Construction and repairs	2,373 89	
Current expenses State Fair	4,305 34	
Total		$15,016 47
Premium awards		9,003 50
Balance in treasury		12,684 02
Season's operations		$36,703 99

STATE FAIR—INCLUSIVE.

RECEIPTS.

Admission tickets	$21,238 05	
Entry fees	676 00	
Rents.	2,324 10	
Privileges	2,316 96	
Total		$26,555 11

EXPENDITURES.

Members' per diem (season)	$1,621 80	
Salaries	1,416 65	
Advertising	1,331 73	
Postage and stationery	257 70	
Express, telegrams, etc	219 41	
Current expenses of fair	4,305 34	
Twenty per cent. of construction and repairs	474 78	
Premium awards	9,003 50	
Total		$18,630 91
Net profits from State Fair		7,924 20
Total		$26,555 11

Thus it will be observed we have paid all expenses and premiums in full, including the interest on the bonded debt of $40,000. Have added $2,373 of improvements, and close the year with $4,216 more in the treasury than when we last reported.

By order of the Executive Committee, we have ordered in for cancellation $8,000 of the 6 per cent. coupon bonds, to be paid when the semi-annual interest is due, January 15, 1886. This is very gratifying, considering the unfavorable weather during the State Fair.

The entries of live stock were 2,004; in the Agricultural Department, grain, etc., 611; horticulture, 160; textile fabrics, 1,752. Total number entries competing for premiums, 4,458. A large proportion of the exhibits in the Mechanical Department were neglected to be entered on the books, therefore we can not give the number of articles exhibited, but the display excelled any heretofore made on the grounds.

STATEMENT OF COMPARATIVE ENTRIES.

DIVISIONS.	1873	1874	1875	1876	1877	1878	1879	1880	1881	1882	1883	1884	1885
Live Stock	1,229	1,453	1,347	918	1,404	1,419	1,524	1,382	1,328	1,476	1,566	2,176	2,004
Agricultural	419	494	392	309	560	625	462	381	534	483	689	652	611
Horticultural	169	291	260	94	116	159	143	130	134	153	234	319	192
Textile Fabrics	523	361	345	212	471	906	1,230	1,063	980	1,081	1,223	1,500	1,752
Total No. entries	2,340	2,599	2,344	1,633	2,551	3,109	3,359	2,956	2,976	3,193	3,712	4,647	4,458

NOTE.—No entries in the Mechanical Department are included in the above, as there were no premiums offered of late years in that department. It was estimated that about twenty-five hundred articles were exhibited by five hundred exhibitors.

PREMIUMS OF THE STATE FAIR.

DIVISION.	1884.			1885.		
	Entries.	Offered.	Awarded	Entries.	Offered.	Awarded
Horses	565	$1,995	$1,919	383	$1,699	$1,598
Speed	42	2,000	1,300	53	1,635	1,422
Jacks, etc	24	236	157	51	191	188
Cattle	387	3,018	2,877	383	2,272	1,915
Hogs	536	878	878	531	744	739
Sheep	329	663	663	290	587	587
Poultry	298	375	316	321	358	402
Farm and garden products	651	470	451	611	456	440
Horticultural products	319	1,005	964	160	792	750
Ladies' Department	1,447	888	755	1,752	1,016	833
Geological and Natural History	31	162	134	32	158	129

We have no change to report in the liabilities or assets of the Board or the Guarantee Fund since our last report, nor any litigation or protests during the year to record.

It is questionable whether such a volume of business as is incident to the State Fair was ever transacted with so little jar or more perfect system and order.

INSURANCE.

The amount of insurance on the Fair Ground Buildings has been reduced by order of the Executive Committee, and at present is as follows:

Exposition Hall (fire)	$24,000
Exposition Hall (cyclone)	2,000
Stables (fire)	2,800
Amphitheater (fire)	500
Implement Hall (fire)	500
Dwelling house (fire)	400
Total insurance	$30,200

The risk is divided among fifteen companies, at the rate of 1¼ per cent. on the main building, 1½ per cent on the stables, and ½ per cent. on the dwelling. Also 1 per cent. rate for cyclone on main hall. The cyclone policy on the amphitheater was cancelled, the companies refusing such insurance on open buildings.

One feature of the State Fair deserves more than a passing notice—the Woman's Department. Presuming that the Superintendent of this department is fully competent to present its merits and provide for its future wants, still I want to call attention to a comparison with this and other departments. The showing is remarkable and should be commended. It has increased from 212 entries in 1876, to 1,752 in 1885, nearly equaling in number those of the Live Stock Department. There was received by express in this department forty-seven packages of goods for exhibition, each containing from five to seventy-five articles, which required labeling and arranging. These had to be repacked and shipped, and, marvelous as it may appear, there has not been a loss from this source reported. No other department requires such care and responsibility. The dog and fish departments are new features, which proved to be of interest to many visitors, and probably will be more so in the future.

The Agricultural Rooms are proving to be indispensable for the now permanent State Industrial Associations, and I congratulate the Board on the future prospect for new quarters in the State House. It is possible and even probable that the next annual meeting of this Delegate Board will be held there. I have been requested by the Commissioners to suggest what kind of furniture and cases are desired for the new rooms, and would recommend that a committee be appointed at this meeting to consider the matter.

The importance of a change of the time for the regular meeting of the Delegate Board prompts me to call your attention to the fact. It is fixed by the statute law, and needs to be considered before the next meeting of the Legislature. There will be several advantages gained and none to lose by a change, and I would suggest that the time be fixed for the second week in November of each year, for the following reasons:

The present time was arranged thirty-four years ago, before the days of railroads, in order to make one trip to the Capital on horseback answer for attending the Legislature and the Agricultural meeting. That reason no longer exists, but the meeting of the General Assembly interferes with other meetings. The weather would be pleasanter six weeks earlier, and there would probably be a larger attendance. We are required to report to the Governor at the end of the fiscal year, October 31, and can have the report of the annual meeting ready at that time.

The fair business would be fresher in the minds of the delegates, and we would gain nearly two months of time in getting the reports in print. The time of the State Fair could be set in advance of other fairs to advantage

The president of each society would represent the business of the past year before the annual elections, which is not the case with many of the agricultural societies at present; thus insuring the notice of the annual meeting in the proper hands, and get the benefit of their experience. This change should be made, or some rule adopted to avoid change of officers in the county societies until after the annual meeting of the Board.

We have abundant reason for gratitude and thankfulness, can record the past season as the most productive in the history of the State, and, at the present writing, the mild winter promises to continue, thus giving relief to man and beast, and aid in the tendency to better times.

To the press of the city and State and the railroads, which are indispensable to a successful fair, we are more than ever indebted for their active and earnest assistance. The Street Railway Company did all they could to accommodate the visitors, but fell far short of the requirement of the fair. With the kindest regards, and thanks to all my associates. Respectfully submitted.

ALEX HERON, *Secretary.*

The financial exhibit contained in the above was referred to the Finance Committee, while the recommendations were referred to the Special Committee on the President's Address.

Following the Secretary's Report was submitted the

TREASURER'S STATEMENT.

Mr. President and Gentlemen:

I herewith submit my report as Treasurer of the Indiana State Board of Agriculture, for the year ending December 31, 1885:

RECEIPTS.

Cash on hand January 1, 1885	$7,009 17
Receipts from sale of tickets	21,238 05
Receipts from all other sources	6,977 86
Total receipts	$35,225 08

DISBURSEMENTS.

Paid on general orders	$15,232 29
Paid on premium orders	9,044 00
Cash on hand	10,948 79
Total	$35,225 08

Your Treasurer holds a note given for real estate by J. D. Campbell and wife, on which there is $1,350, balance of principal, and $231.68 interest due.

Respectfully submitted,

Jan. 1, 1886. SYLVESTER JOHNSON, *Treasurer.*

The Board then listened to an address by Mrs. L. May Wheeler, delivered on behalf of the Woman's Industrial Association. A rising vote of thanks was accorded the lady for her excellent production. The address will be found elsewhere in this report.

Mrs. A. M. Noe, President of the Woman's Industrial Association, submitted the following from the

WOMAN'S DEPARTMENT.

MRS. A. M. NOE, SUPERINTENDENT.

As Superintendent it affords me great pleasure that at the close of each year we are able to report a marked increase in this department.

With the added facilities you have afforded us we have been free and untrammeled in the work of the last year, and while we are grateful for the results, we feel as if it were but the beginning of what the Woman's Department shall be in the future. The expenses have already been given you by your worthy Secretary. The number of entries for the exhibit of 1885 were 1,762, being 315 in excess of the preceding year. When it is remembered that the rule to exclude articles that have taken the premium for two years is rigidly enforced, it is remarkable that such an exhibit can be made of new and beautiful articles. There is no comparison between the exhibit of eight years ago and that of to-day. At that time the exhibits were brought and arranged by professional exhibitors, without any regard to order or system. Hence, the display was not beautiful or at all creditable, while now the arrangement of the exhibit in booths, in their order and according to the books, as numbered, is a perfect system and presents a magnificent display to the visitor. Consequently the professional exhibitors, who had no interest in the success of the fair but presented themselves to you in the role of yearly pensioners, are gradually disappearing—

"Fading away like the stars in the morning—
Only remembered for what they have not done."

The exhibit in art was much finer and more varied than ever before, and it alone was well worth the price of admission to the fair. The increase in this department is so great that it will necessitate the erection of additional booths next year. The amount of goods received by express was so great that it became necessary to appoint one of our workers, whose duty it was, to receive all articles, keep a correct list of the same, repack and return to owners at the close of the fair. This was done without the loss of an article, as has already been shown in the report made by your worthy Secretary, who has become so thoroughly interested in the Woman's Department that he could not forbear making a partial report of the same. At the January meeting the President, Mr. Mitchell, in his address, recommended that the management of the entire upper floor be given to the Woman's Department, which recommendation the State Board adopted and tendered to the Woman's State Fair Association. After due deliberation by the Executive Board, it was finally decided to accept the trust. At the February meeting of the Board we signified our acceptance of the same, upon certain conditions, one of which was "absolute control," for we felt that we could not undertake the work and be trammeled in any way in the management of it. The President of the Association took upon herself the duty of soliciting an exhibit, and when we remember that for several years the east end of the upper floor has been conspicuous for its emptiness, you can realize how arduous the labor was. But, by untiring efforts and personal acquaintance with the business men of our city, and presenting to them the necessity of making a display that would be creditable, we were enabled to so fill the upper floor that space was at a premium.

Some of our merchants who had not exhibited at our fair for years expressed great satisfaction at the new order of things, and hoped that greater facilities might be afforded them in the future that would enable them to make larger and finer exhibits. The amount received for the sale of privileges in this department was $150, and for rent of show cases $15, making a total $165, which we were enabled to place in the hands of your treasurer. As the success of the year has demonstrated to you our ability to manage the entire upper floor, we make the following recommendations: First—That the remainder of the windows in the east end be replaced. Second—That portable gates be placed at the foot of the three stairways, these to be closed at the clearing of the upper floor at 6 o'clock of each evening during the fair, thus giving greater protection to the exhibit, and reducing the police expenses on the upper floor. Third—That the sum of $500 be offered in premiums to the business exhibits for the east end of the upper floor, as inducements to our merchants to make a display of the finer and more perishable articles, which will enhance the beauty and attractiveness of the fair. Fourth—As we have 140 feet of show cases for the Women's Department, and have solved the problem of caring for them, that the Board purchase 150 additional feet, which can be had for the sum of $250, thus saving the annual expense of $75 or $80 for the renting of show cases. The amount we receive for show-case space will pay the interest on the money invested. In conclusion, let us thank you for your hearty co-operation in our labors. And, without doubt, you already realize that the success of the State Fair is largely due to the mutual interest that each organization has for the other.

Pursuant to resolution the following nominations were made to fill vacancies occurring on the Board:

1st District—Robert Mitchell and Jasper N. Davidson.
2d District--Samuel Hargrove.
3d District—J. Q. A. Sieg.
4th District—Wm. B. Seward.
8th District—S. W. Dungan and I. N. Cotton.
14th District—L. B. Custer and James McClung.
15th District—W. A. Banks.
16th District—Orlando Kimmell and R. M. Lockhart.

Fielding Beeler submitted his

ANNUAL REPORT OF GENERAL SUPERINTENDENT.

Mr. President and Members of the Indiana State Board of Agriculture:

GENTLEMEN—I am gratified at being able to report the business under my charge for the past year as having been successful in the way of receipts from rents, sales of privileges, etc. But as it appears in detail in the Secretary's report I deem it unnecessary to repeat it here. As the honor of relating the success of our last Fair falls to the lot of your President, and as the privilege of reporting the number and excellence of exhibits is accorded the Department Superintendents, I will restrict myself to saying that which all will concede: That our late Fair was never equaled in this State and probably in no other State. The buildings and grounds are in good condition. A considerable amount was expended in repairs to the roof of the Exposition Building, and, although in fair condition as far as leakage is concerned, it has reached such a state of dilapidation that I think it would be false economy to make further repairs, and therefore recommend it be re-roofed. The roof of Power Hall No. 2 is also in bad condition. The agricultural product hall west of main building has been shingled recently, and the horse stalls on the east side of the ground have been patched up so as to answer for some time. The judges' stand on the race track was thoroughly repaired and remodeled recently. The old music stand was rebuilt and converted into a headquarters for horse superintendents, and the same character of building was built for cattle superintendents. I recommend that additional horse stalls of a substantial character be built to take the place of the temporary structures which were required to be built last year. This improvement is due exhibitors and is an economical move, as the unavoidable waste and extra work in tearing down, hauling and piling lumber, would more than pay for the labor of building permanent stalls. A fountain was constructed on the grounds north of the main building for the supply of drinking water, the basin of which was utilized to show German carp. Three hundred feet of new pipe was laid for the purpose of affording a more convenient supply of water to run machinery. Several ornamental buildings were erected this year for the display of implements, etc. I would recommend that this course be encouraged in the future, as it relieves the Board of the expense of providing more room under roof and rids the managers of a perplexing responsibility.

The report was referred to the Committee on Fair Grounds.

Mr. Mitchell. I move that a special committee be appointed to look after the furnishing of the rooms in the new State House set apart for the use of the State Board of Agriculture. This matter is important. I hope when we move in there to be in good shape and have creditable furniture. We should have a special committee for this purpose, made up from the State Board.

Mr. Lockhart. The suggestions made by the Secretary are important, indeed, and I am in favor of appointing this committee.

Mr. Cumback. If we do not appoint this committee to look after the furnishing of the Agricultural rooms in the new State House at this time there will be no one authorized to do so. For my part I think it proper to appoint two ladies additional as members of that committee.

A committee, consisting of the President and Secretary of the Board and the President and Secretary of the Woman's Industrial Association were appointed to advise with the State House Commissioners, as to the furnishings in the rooms of the Board in the new State House. The Superintendents of departments submitted their reports, as follows:

MECHANICAL DEPARTMENT.

ROBERT MITCHELL, SUPERINTENDENT.

Gentlemen of the Delegate State Board: As one of the Superintendents of the Mechanical Department I will say that the exhibit was simply immense, and the exhibitors were well satisfied with the space allotted to them, with probably one exception. No tickets were given to helpers at the last fair, and only two admissions a day were given to the owners or managers of exhibits. The plan of registering help and checking them off as they passed in at the door worked admirably and to the interest of the Board's exchequer. I would recommend that no free tickets be issued to exhibitors in the Mechanical Department in the future, for the reason that the Board is allowing many of these exhibitors to put up buildings on the Fair Grounds for which no rent is charged. These exhibitors are there for the express purpose of doing business, and they admit that the Indiana State Fair is the best one in the country for taking orders. Many of the manufacturers and business managers expressed themselves to me that an admission fee should be charged them, as the facilities for making displays accorded them were equal to that of any fair in the country. Another reason why exhibitors should he charged is that a large class of them come with small articles just patented. Many of these articles are not worth twenty-five dollars, in fact, yet for practical utility are worth more than other articles which are claimed to be worth more than twenty-five dollars. This class of exhibitors ought to pay at the gates, for the profits accruing from the sale of these patented articles are very large, especially at fairs, which is their harvest time.

DISCUSSION.

Mr. Tillson. I think we should not charge the exhibitors, because they are what make our fairs; but the State Board is better prepared to say what will be to our best interests, and I am willing to leave the matter with them.

Mr. Lockhart. You have struck upon a vital question in the interest of the fair. I am opposed to charging the men who come here to help make up our exhibit. If we do, we will make a grand mistake.

Mr. McDonald. They have had trouble in Ohio in this respect. It has also been a source of trouble in Michigan, Chicago and St. Louis. I think this should go to the State Board proper, and let it decide.

Mr. Mitchell. There is a National Fair Association on the tapis now, and let all the associations that have good running fairs get together, and have a uniform system in this matter.

MECHANICAL DEPARTMENT.

WILL A. GREER, SUPERINTENDENT.

To the President and Members of the Delegate Board of Agriculture:

As one of the superintendents of the Mechanical Department of the State Fair for 1885, I would respectfully report as follows:

I arrived in the city the Friday before the opening of the fair, and found the grounds very well filled with articles in this department. From this time until Wednesday of fair week articles came in, in great quantities.

The rule requiring all machinery to be in place by Monday evening was as strictly adhered to as could be, considering the weather and the circumstances under which some of our exhibitors were placed. The enforcement of this rule, I think, should be left, in a great measure, to the discretion of the department superintendent. By Tuesday evening of fair week every available space was filled by exhibitions, and more space being demanded a system of crowding and dividing space was resorted to, until every exhibitor had a nook or corner in which to make his exhibit.

Numerous new buildings and sheds were erected, still there was far from room enough to satisfy the demand. The outside space has, since the great increase of exhibitors, become entirely to small to accommodate the crowd, and the time has come when more room outside and more shed room is demanded.

The moving of the mechanical headquarters to its present position near the main building aided the superintendents very much in their work, and enabled us to adopt a new system of exhibitors' admission tickets which worked to perfection. The exhibitors' tickets were issued as usual, yet no tickets were issued to assistants, they being required to register their names as assistants, which register was kept at the gate near the mechanical headquarters, and each person, as admitted, was checked off. We thus overcame a traffic in tickets which has heretofore been taken advantage of, much to the detriment of our receipts.

Since the different articles in this department were passed on by a committee on "Special Merit" it is needless, even if it were possable, to mention the different exhibitors. It is sufficient to say that there never was in the State an exhibition on such a scale, nor one made by a more gentlemanly set of exhibitors.

The superintendents in this department were aided very materially by Charles E. Merrifield, who took entire charge of the spacing and placing of the different exhibits.

POULTRY DEPARTMENT.

JOHN RATLIFF, SUPERINTENDENT.

The exhibits in this department were very satisfactory, and consisted of almost all breeds known to the fancier. There were a number of exhibits, consisting of several varieties of pigeons, conies, ferrets, and other small birds and animals not enumerated in our premium list. There were quite a number of exhibits made with no view to a premium, which contributed to make the show attractive. Turkeys, geese and ducks were shown in goodly numbers.

Nearly eight hundred birds, including pigeons and other small fowls and animals not competing for premiums, were on exhibition, all of which added to the attractiveness of the show.

Exhibits were made from States besides our own, and from quite a number of counties within our State.

There were many very fine specimens shown, some of which were held by their owners at prices ranging from $50 to $150.

Our list did not contain all the breeds on exhibition, and your Superintendent thinks a few breeds might with propriety be added to the list, especially the Wyandot.

The awarding of premiums was by an expert judge whose decisions were universally acquiesced in with very little expression of dissent.

Exhibitors in this department manifested a general good feeling, and extended a due degree of courtesy towards both your Superintendent and other exhibitors.

THE CATTLE DEPARTMENT.

MESSRS. DAVIDSON AND BOGGS, SUPERINTENDENTS.

Mr. President and Gentlemen:

The Cattle Show at the State Fair of 1885 was unusually large, especially in the dairy breeds, among which exhibits were some very noted animals. The beef breeds were represented by the best the country produces, including many prize winners.

The various breeds were represented as follows: Short Horns, 36 head: Herefords, 24 head; Polled Angus, 7 head; Jerseys, 120 head; Devons, 53 head; Holsteins, 48 head; total in 1885, 288; total in 1884, 262; total in 1883, 273.

The distribution was as follows: New York, 37; Ohio, 45; Kentucky, 1; Illinois, 9; Indiana, 195.

A number of Ayrshires from Pennsylvania were entered, but from some unknown cause failed to attend.

The order of the Board at the February meeting, reducing the premiums, seems to have been fully indorsed by exhibitors in this department, indicating, in a measure, that they prefer smaller premiums paid in full than larger ones under a pro rata clause.

The Awarding Committee, by the expressed wish of the board, consisted of three; two to act, and, in case of disagreement, the third to decide. This rule, as applied, gave general satisfaction.

Between the beef breeds of Indiana and Illinois there was a sharp and spirited contest, the former coming out ahead in the herd prizes.

The dairy exhibits included much the larger number of animals, and their examination required a wonderful amount of patience on the part of the Awarding Committee.

Indiana had the honor of taking first premium in the sweepstakes class. When the sixteen herds were called, competing for only two premiums, the excitement was intense. The decision gave Ohio first money and New York second.

Your superintendents respectfully suggest that the Board consider the propriety of omitting the sweepstakes premium in the dairy class, and offer premiums for herds in the different classes, as it seems impossible for awarding committees to judge intelligently as to the merits of the different breeds in competition. Greater satisfaction would result to exhibitors of dairy stock and judges be relieved of a very onorous duty by making this change. We further suggest that the premiums on herds of "two years old and under" be made more nearly equal to that of the old herds, as the chief aim of the breeders of beef cattle should be to show the early maturity of the different breeds.

The exhibit throughout was very creditable to the State Fair. With requisite space Indiana might have the great central stock show of the United States.

The superintendents return thanks to the exhibitors for their prompt response to the call of the marshal, and their courteous demeanor throughout the week.

CARRIAGES, BUGGIES, ETC.

J. M. GRAHAM, SUPERINTENDENT.

The show in this department was larger than at any previous fair, and the workmanship, as a rule, was of the finest quality. There were exhibitors from several places in Indiana and from a few cities in Ohio, and the only drawback to the display was the want of room, necessitating a cramped condition of things as far as space was concerned. Bicycles and tricycles were exhibited in large numbers, and were an attractive feature of this department, being much admired by "young America." I found the exhibitors, without exception, to be genial, whole-souled gentlemen, and, as a rule, pleased with their exhibition space.

AGRICULTURAL DEPARTMENT.

H. LATOURETTE, SUPERINTENDENT.

Mr. President—In this department the display was as large and fine as at any of the preceding fairs. In vegetables the exhibition was simply immense, and was the admiration of all visitors. Countless varieties of wheat, grasses and seeds were exhibited, and in awarding premiums in this department a grain tester was used, which gave more general satisfaction to exhibitors. There was, in addition, a fine show of dairy products by Indianapolis commission men, and of honey by the Indiana Bee-Keepers' Association.

HORTICULTURAL DEPARTMENT.

L. B. CUSTER, SUPERINTENDENT.

Mr. President and Gentlemen of the Delegate State Board of Agriculture:

The display of apples, pears, grapes, etc., in my department, was very large and fine, the space allotted for the purpose being completely filled. Nearly 1,200 plates of fruit were on the tables, and quite an amount was not displayed for want of room. The State Horticultural Society made a very creditable showing through the instrumentality of its President and Secretary, simply for the purpose of adding interest to the State Fair, not competing for premiums. These fruits were collected from different localities in the State, and visitors frequently expressed surprise at seeing such an extensive display, knowing that in the largest portion of the State the apple and pear crops were a total failure. Especial mention is due the Crawley County Fair Association, of Kansas, and Mr. F. M. Benham, for their splendid exhibits. The melon show was extensive and unusually good.

In the Floral Department the display was attractive, and was much admired, notwithstanding exhibitors were compelled to submit to a crowding process, not very desirable.

SWINE DEPARTMENT.

DICK JONES, SUPERINTENDENT.

Mr. President—It is a satisfaction to be able to record that a finer show of hogs was never exhibited at any State or county fair than at our last exhibition. There were exhibited in the Poland China class 292 head, Berkshires, 137 head; other large breeds, 121 head; Suffolks, Essex and small breeds, 83 head, or a total of 633 head. The States represented included our own, Ohio, Illinois, Michigan and New York, as also a great Berkshire herd from Canada. Although the competition was spirited, the best of feeling prevailed throughout. This was due to the gentlemanly conduct of exhibitors and the good judgment of the awarding committees. The new way of running committees—two to act and the third to decide in case of a tie—worked like a charm and gave general satisfaction. There are many improvements we could suggest, but for the limited space we have at our disposal, the accommodations are the best that can be made at present. All who have visited the fair know how stock in this department is crowded, and had we grounds large enough I would recommend the building of additional pens and sleeping booths. We hope in 1886 the same good feeling as was manifested by exhibitors at the last fair will prevail.

SHEEP DEPARTMENT.

JOHN Q. A. SIEG, SUPERINTENDENT.

The show of sheep, both in numbers and variety, was very creditable. To a number of gentlemen, whose names appear in the list of premium awards, am I indebted for making the show in my department a grand success. The quality of the exhibits, I think, has never been surpassed at any fair ever held in this State, as a majority of the specimens shown were imported to this country at considerable expense to the exhibitors. The department closed its labors without any protests being entered, all agreeing that, although some mistakes might have been made in the awards, as a rule, the premium went to the best animal, and that the committee worked faithfully, giving premiums to those who, in their judgment, were entitled to the same.

HORSE DEPARTMENT.

S. W. DUNGAN AND E. H. PEED, SUPERINTENDENTS.

Mr. President and Gentlemen:

The show in horses at our recent State Fair was the largest in numbers and, we think, surpassed in quality all former exhibitions. All the stalls were occupied, besides several cattle stalls in the northwest corner of the grounds. Some thirty horses were kept outside the grounds in the city. Most of these, we believe, were trotting and running horses. We commenced and continued the show according to programme in the premium list, but the entries in all the classes were so large and the competition so close that, although we worked two committees at the same time (whenever practicable), we did not get through on two days until the races were called.

It is impossible in the brief space we are allotted for our department reports to make mention of the many fine exhibits made by enterprising individuals and associations who not only breed fine blooded horses, but are spending much time and vast sums of money in securing the best selections and specimens of the various breeds (both in Europe and America.) We therefore desire to be excused from entering into details or personalities, as we can not do justice to all, and it would not do to make mention of some and omit others. Suffice it to say that the class, sweepstake and herd shows were the largest and grandest display of horses ever witnessed on the grounds. Two or three of the herd shows extended on the track the whole length of the amphitheater building. We are pleased to know that the

Board was successful in commencing awards in the different departments early in the week, so as to get through in good time without being crowded and hurried too much.

We also desire to express our obligations to our efficient President (R. M. Lockhart) for his thoughtfulness in appointing two members of the Board to take charge of this department. It is assuming such proportions that unless two committees are worked at the same time it is impossible to get through in time for the afternoon races.

We were fortunate in having the services of prompt, critical and competent awarding committeemen, two of whom acted while the third was held back in case of disagreement, but the unanimity with which they voted in nearly all the classes was very remarkable, so much so that the third party was seldom called. The decisions were generally satisfactory to exhibitors, and seemed to meet with marked approval by the outside crowd, and, what is worthy of mention, there were no protests made in this department, which is quite unusual, and for which we feel under obligations both to exhibitors and these who served in the capacity of committeemen.

We were somewhat amused at the remark of an outside party when we were showing in a ring where there were twenty-nine entries. Said he: "Twenty-seven of those men will come out of the ring feeling that they have not received justice at the hands of the committee." We failed, however, to see any manifestation of it.

In closing our brief report we venture a few suggestions and recommendations. 1st. In classification we would insert in the place of "Grade draft horses," "Agricultural horses." 2d. We would substitnte "Coach and carriage horses" for "General purpose horses."

Our races were conceded by all to be the best ever given at our State Fair, and the fastest time recorded on our track. We think, however, that it would be well to place our pacers nearer on an equality with the trotters, as we have five classes in the trotting races and only two in the pacing races. We would finally recommend that press and special reporters have better accommodations.

AMPHITHEATER

W. A. BANKS, SUPERINTENDENT.

Mr. President and Gentlemen:

As it is not customary to submit a lengthy report from this department, I will only say that everything passed off smoothly during the fair with my working force of assistants. Thursday and Friday the building's seating capacity was tested, and a great number were unable to get seats after the races began on these days.

I would recommend, although outside of my department, that hereafter the reporters be better provided for. The judges' stand could be raised one story higher and fitted up for their accommodation. I further recommend that the amphitheater be raised and lengthened for future use.

JANUARY 6, 9:30 A. M.

Board met pursuant to adjournment.

The Committee on Finance reported having carefully examined the accounts of the Secretary and Treasurer and found them correct.

The Committee on Rules and Regulations reported, recommending no changes.

The Committee on Premium List reported, recommending a number of changes, which were referred to the State Board proper.

Mr. Cumback, from the Committee on Awards, reported as follows:

On best gallon wheat, any kind, $3—James Riley, Thorntown.
On second best gallon wheat, any kind, $2—J. P. Nicholson, New Castle.
On best three ears corn, any kind, $3—J. W. Schooler, Whitestown.
On second best three ears corn, any kind, $2—G. A. Stanton, Greenwood.
On largest ear corn exhibited, $1—Charles C. Sneadon, Frankfort.

The report was adopted.

Prof. F. M. Webster, of Purdue University, read a paper on "Insects Affecting Corn," which will be found elsewhere in this report.

The special committee, appointed to consider the recommendations contained in the addresses of the Presidents of the State Board and Woman's Industrial Association, through Mr. Cumback, reported the following, which was adopted: "Your committee beg leave to report that they have had the recommendation of the President to try and lease the grounds in the east part of the city and rent or sell the present Fair Grounds under consideration, and that they fully concur in his recommendation. They therefore suggest that every member of the Board and every delegate shall present the subject to the candidates for the Legislature and place all the facts before them; and, at the next annual meeting of the Delegate Board, a committee be appointed to draft a bill to that effect and urge its passage by the Legislature. We heartily concur in the recommendation of the President to employ experts as judges at all Fairs, as llikey to give the best satisfaction as well as render full justice to all exhibitors. As to the recommendations contained in an address of the President of the Woman's Industrial Association, we concur in the suggestion that the windows in the east end of the upper floor of the Exposition Hall be replaced; that gates be placed on the stairways, as recommended in the report of the President.

"Regarding the request for additional premiums in the Merchants' and Business Men's Department, we concur in the recommendation, and suggest that the premium list be enlarged to secure a full exhibit of the finer goods. We concur in the recommendation to purchase 150 feet of show cases for this department, and believe that every possible facility should be given them to make a creditable display."

Mr. Cumback. It is conceded that our present Fair Grounds are too small and not accessible by railway. The State owns east of the city some fifty or sixty acres, which can be leased by this association. The President has suggested this in his address, and the committee has considered the subject and think it is practical to secure larger grounds which are more accessible by railroads. The committee recommend that between this and the meeting of the next Legislature the subject be investigated by a committee, so that we may have their advice at our next meeting, which is before the meeting of the Legislature, and then appoint a committee to secure the passage of a bill granting a lease on certain conditions. At our next meeting we can appoint a committee to draft this bill. The ground at present is of no use to the State except for pasture, and if we can secure this, we can sell our present Fair Grounds and pay our debts.

Mr. Johnson. There are three railroads touching the grounds—the Panhandle, Cincinnati, Hamilton & Indianapolis, and the Big Four. The Belt Road is also within a half mile. There are two street-car lines now reaching the land. It is undoubtedly a subject we should consider at this time.

Mr. Cumback. The President of this association should urge the Governor to present the whole facts to the Legislature in his message.

Mr. McGaughey. Would it not be wise to appoint this committee now, as the Legislature will meet near the time of our next annual meeting, and this committee will have more time to prepare for it?

A motion by Mr. McGaughey was carried, appointing a committee, consisting of the President, J. C. McGaughey and Col. Will Cumback, to present to the forthcoming Legislature the recommendations contained in the above report relating to the Board's property.

The paper by Hon. J. N. Davidson, on "Agricultural Fairs," was discussed at length by Messrs. Seward, Cumback, Balyeat, Gilpin, Smith, Cotton, Mitchell and McDonald. It will be found elsewhere in this report.

On motion of Mr. Cumback, the following was adopted by the Board, and copies ordered to be sent to the officers of county and district agricultural societies throughout the State:

Resolved, That any county or district fair which shall allow the sale of intoxicating liquors on the fair ground, or which will not enforce the law in regard to games of chance, is unworthy the name of an agricultural society, and meets the strongest condemnation of this Delegate Board.

The paper of Prof. Webster was discussed by Messrs. McDonald, Smith, Ratliff, Sieg and McDavis. (See essay matter.)

The following by Mr. Mitchell was unanimously adopted:

PLEURO-PNEUMONIA.

WHEREAS, Experience has demonstrated that all attempts to deal with outbreaks of pleuro-pneumonia or other contagious diseases by State action have not only proved inefficient, but have caused much needless annoyance and severe losses on the part of cattlemen of this country; therefore,

Resolved, That our Representatives in Congress are hereby requested by the Delegate State Board of Agriculture to use all honorable efforts to secure such National legislation as shall completely eradicate pleuro-pneumonia from the remaining disease centers and furnish ample protection for the future from all outbreaks of contagious diseases.

WHEREAS, Governor Gray, in time of danger to the live-stock interests of our State from contagious diseases, responded promptly to the request of cattlemen for quarantine measures; therefore,

Resolved, That the thanks of the people, and particularly the cattle breeders of this State, are due Governor Gray, and that his course is hereby commended by the Delegate Board of Agriculture.

Resolved, That the action of the Governor in appointing a State Veterinarian is also heartily commended.

Mr. Mitchell. We should do something to suppress the ravages of pleuro-pneumonia in this country. Kentucky has lost many valuable herds by it, and we should protect ourselves from this dreaded disease. It is our duty to support this resolution and address our members in Congress and let our wants be known.

Mr. S. D. Thompson, Secretary of the American Percheron Horse Breeders' Association, by request, presented the following:

President and Members of the Indiana State Board of Agriculture:

GENTLEMEN:—At the last meeting of the American Percheron Horse Breeders' Association, whose membership is composed of breeders from almost every state and territory in the Union, it was decided to place at the disposal of the State Boards of Agriculture of such states as felt sufficient interest in the encouragement of the propagation of this valuable race of horses within their borders, a valuable challenge medal of gold, to be awarded to the best State-bred Percheron stallion, and when taken twice in succession, or three times in any course of alternation, to become the absolute property of the person so taking it. The society also appropriated $5,000 to be given in premiums at the next annual exhibition of the Percheron Horse Breeders of America, such exhibition to take place at some point best suited to subserve the interests and convenience of the breeders of the whole country.

These appropriations have for their object the encouragement of the breeding in our own country of a sufficient number of this race of horses, which has become so popular, to supply the demand of our own country, and thus reduce the necessarily large expenditures that are annually made for the purchase and importation of stallions from abroad. The Percheron Horse Breeders' Association of America has every reason to believe that with the encouragement and support that has been extended by the State Boards of Agriculture of the United States to other breeds of fine stock, they will, at an early date, be able to accomplish this desirable end.

Ever since the history of the Percheron race was given in full to the American people concerted effort has been rapidly going forward for its establishment in this country on the sound basis of scientific and intelligent breeding principles, which can only be based upon established stud records for the preservation of genealogy, in order to secure to both breeder and purchaser the certainty of purity of blood. The Percheron breeders, organized under the name Societe Hippique Percheronne of France, publish the Percheron Stud Book of France, which is the only stud book of any race of draft horses published in France, and the American Percheron Horse Breeders' Association, under whose auspices the Percheron Stud Book of America is published, enjoys the honor of possessing the oldest draft horse stud books of the world.

It is with this record and upon this basis that we ask you, in the forthcoming premium list of your State Fair to make a classification for pure-bred Percherons, the admission to this class being confined to animals recorded with their pedigrees in the Percheron Stud Books of either France or America, and place as a sweepstake prize the gold medal donated to you by our Association for the best State-bred Percheron.

Very many of your citizens possess the finest specimens of Percheron mares and stallions. The much greater number of them, from their continuous breeding of this race in certain localities, possess animals eligible to entry in the Percheron Stud Book of America under the five-cross rule. You will, therefore, by encouraging the breeders of your State, in a few years possess a large number of the finest Percherons in this country, whose integrity of breeding will be so thoroughly established by their records in the Percheron Stud Book, that their breeders will reap large rewards for the care and attention they have bestowed upon this branch of agriculture.

Not doubting that an industry which gives so much promise of future benefit to your people will receive the consideration of your distinguished body, we remain,

Very respectfully yours,
AMERICAN PERCHERON HORSE BREEDERS' ASSOCIATION.
T. W. PALMER, *President.*
S. D. THOMPSON, *Secretary.*

The communication was referred to the February meeting.

The Committee on Fair Grounds reported, recommending that the poultry house be put in better repair, as also the sale of the boiler and engine-house, and that the gates recommended by the Ladies' Department be placed at the top of the stairs instead of at the bottom. Concurred in.

At the beginning of the Afternoon Session the Delegate Board proceeded to the election of members to fill the places of those whose terms expired, with the following result:

1st District—Robert Mitchell.
2d District—Samuel Hargrove.
3d District—John Q. A. Sieg.
4th District—William B. Seward.
8th District—S. W. Dungan.
14th District—L. B. Custer.
15th District—W. A. Banks.
16th District—R. M. Lockhart.

President Lockhart. This is a proud day of my life, to see and hear the delegates say to the State Board of Agriculture, "Well done, good and faithful servants." This has been the first time in the history of this association that there has been a unanimous election of the old Board. The gentlemen who competed with us are well known and able men and would make just as good members as we. The manner in which you have expressed yourselves shows that you have confidence in our work.

Col. J. B. Maynard delivered an address on "Agriculture, as a Source of Prosperity," and at the conclusion a rising vote of thanks was accorded him. The address will be found elsewhere in this report.

J. M. Osborn read a paper entitled "Cheap Homes Needed to Insure Prosperity," which will be found embraced in this report.

Hon. John Q. A. Sieg read a paper on "The Labor Question," which will be found in this report.

Adjourned.

JANUARY 7, 10 O'CLOCK, A. M.

The Board met. The Secretary was instructed to have printed and distributed to the officers of the county and district societies the following laws of the State:

ON GAMBLING.

AN ACT to Prevent the Officers of Agricultural Societies or Joint Stock Associations from Permitting Gambling on the Grounds of such Society or Association, and Providing Penalties for the Violation Thereof. Approved April 4, 1885.

SECTION 1. *Be it enacted by the General Assembly of the State of Indiana*, That it shall be unlawful for any officer or officers, or any manager, director or trustee of any county fair, agricultural society or joint stock association, or the officers of any fair, agricultural joint stock company or association organized under the laws of this State, to rent, lease, let or donate any portion of the premises or grounds, or any booth, stall or tent, owned, used, leased or occupied by any fair, society, association or stock company, to any person, persons, company or society, to be used for the purpose of carrying on any game of chance or skill, or any scheme, lottery or drawing, with dice, cards, balls or wheels, or any other device for the purpose of wagering money or anything of value, or upon the result of which money or anything of value shall be wagered. Any officer or officers who shall violate any of the provisions of this act shall, upon conviction in a court of competent jurisdiction, be fined not less than twenty-five (25) dollars nor more than one hundred (100) dollars.

SALE OF LIQUORS.

SEC. 2100 R. S. Whoever sells or exposes for sale, gives, barters, or in any way disposes of any spirituous, vinous, malt or other intoxicating liquor, or any article of traffic whatsoever, or shall erect, bring, keep, continue or maintain any booth, tent, wagon, shed, huckster shop, or any place for the sale of spirituous, vinous, malt or other intoxicating liquor, or any other article whatever, or being the proprietor, owner, or occupant of any real property, shall lease or permit the same to be occupied for any such purpose, at any place within one mile from the place where any religious society or assemblage of people is collected or collecting together for religious worship, or any agricultural fair or exhibition, shall be fined in any sum not more than fifty dollars nor less than ten dollars, and imprisoned in the county jail not exceeding ten days. But this section shall not be construed to include such persons as may carry on their regular business at their usual places of transacting the same, nor such persons as may own, in fee simple, the realty within one mile of the places above named, who shall desire to carry on in his or their own persons, the business of providing food for the persons or the stock of those attending the places above named; nor to such persons as may have the permission of those having charge of any such meeting or exhibition to establish suitable places for the purpose of furnishing food for those attending the same, for horses, cattle or other stock, and who are observing the regulations of such society, assemblage, fair or exhibition, and the laws of the State.

The paper of Prof. J. E. Campbell, on "Drainage," was discussed at length by Messrs. Mitchell, Davidson, Prof. Latta, Seward and Lockhart, and called forth the following, by Mr. Mitchell, which was unanimously adopted:

WHEREAS, The improvement of the Kankakee River, in Indiana, requires additional improvement in the State of Illinois; therefore,

Resolved, That our representatives in Congress be requested to secure an appropriation from the General Government sufficient for the improvement of the Kankakee River between Momence, Illinois, and the crossing of the Pittsburg, Fort Wayne and Chicago Railroad, in Laporte County; be it further

Resolved, That a committee, consisting of the President, Secretary of the Board and three others be appointed for the purpose of carrying into effect this resolution. That a copy of these resolutions be sent to each member of Congress from Indiana and Illinois.

Prof. Campbell, J. Q. A. Sieg and W. A. Banks were appointed as the three committeemen designated in the above resolution.

Mr. Ratliff. The resolution asks for $150,000. It occurs to me that to cut through a large stone quarry that is in the way and then to clean the bottom of the river of sand for forty miles, the appropriation is not large enough. We might secure that appropriation and swamp in the work. We have had some experience of this kind in our county. It is important, before this appropriation is asked for, to make an estimate of the cost of the work, and whether it is proper to ask for this amount or only for an appropriation. I prefer leaving the amount of appropriation blank.

Prof. Latta. Would it not be better to say $150,000 or a larger sum, leaving it at their discretion?

Mr. Banks. I feel the importance of this matter. I am satisfied we can not make progress until this is carried out, and we can not drain these lands without some help. The farmers will take care of the land if we give them an opportunity to do so.

A paper on "Fish Culture" was read by John Miller, of Johnson County, which is embraced in this report.

Prof. J. H. Smart, of Purdue, by request, spoke briefly on agricultural and educational matters. He said:

GENTLEMEN—I feel like coming here and using that one-string fiddle of my own, which I used before, and emphasize the invitation which has often been extended to you to come and see us. It is a duty you owe to us to come and see what we are doing. It was said in the Legislature, a year ago, that we were doing more mischief than good; if this is true you should find it out and apply a remedy. I believe if you were to come to Lafayette and see what we are doing you would refute statements of that sort. I feel that we are doing much good, not only for boys but girls. We are not doing as much as we should do and intend to do. We have made many improvements and intend to make many more. It is our purpose to build a new stock barn so arranged that we can keep the best kind of stock and make such experiments as will give us much valuable information, and send out bulletins to different parts of the State, and in that way do much good. We expect to improve the institution in the next year more than we have in the last two or three years. We are trying to educate boys and girls in such a way as to create an interest in agricultural pursuits. I believe it can not be said that any great numbers leaving here go into the professions. Some of them do and have, but a large number go back to the farms and shops. While our number taking an agricultural course is small, yet it is larger than before. We had eleven last year. The farmers send their sons to the classical schools, but I believe if they knew what we are doing we would get many more of them. But, against eleven last year we have twenty-six this year. If we can double in one year and the next more than double, we are doing well and will make one hundred after while. We want your help to do this. We should have representatives from this institution in every county in the State. We want your help and invite you to come and criticise us as much as you please. We want to get the views of practical men. We do some things that are important and we ask a fair share of patronage. There are sixteen classical schools in this State. God bless them and let the boys go there; but we should have a large share of patronage, and we will try and keep all we get.

Adjourned *sine die*.

MEETING OF THE STATE BOARD, 1885.

2 O'CLOCK, P. M.

Board met, with all members present, excepting Mr. Greer. No unfinished business being presented, on motion of Mr. Ratliff, President Lockhart pronounced the old Board adjourned *sine die.*

STATE BOARD, 1886.

3 O'CLOCK, P. M.

The new Board met and organized by calling Hon. J. Q. A. Sieg to the chair. The election of officers for the ensuing year resulted in the selection of:

President	William B. Seward, of Monroe County.
Vice President	John M. Graham, of Delaware County.
Executive Committee	Messrs. Davidson, Peed, Ratliff and Boggs.
Secretary	Alex Heron, of Marion County.
Treasurer	Sylvester Johnson, of Marion County.
General Superintendent	H. B. Stout, of Marion County.

The newly-elected President was escorted to the chair, and thanked the Board in a few well-chosen remarks for its recognition.

On motion, the committee appointed at a former meeting and the President were requested to attend the meeting of the Ohio, Indiana and Michigan Fair Circuit at South Bend, January 14.

The chair appointed Messrs. Mitchell, Jones, Hargrove and Custer, with the President, to arrange for the meeting of the International Association of Fair Managers, February 3.

The salaries of members and officers of the Board were made the same as 1885, with the exception of the Secretary's, which was increased to $1,500 per year. Adjourned to February 2, 1886.

INDIANA STATE FAIR.

PREMIUM AWARDS, 1885.

HORSES.

S. W. DUNGAN AND E. H. PEED, Superintendents.

BOOK I—Heavy Draft.

(Where State is not given Indiana is implied.)

FRENCH DRAFT.

Stallion, 4 years old and over, Dillon Bros., Normal, Ill	$35 00
Second, Indianapolis Imp. and Stock Co	18 00
Stallion, 3 years old and under 4, Dillon Bros., Normal, Ill	25 00
Second, Indianapolis Imp. and Stock Co	13 00
Stallion, 2 years old and under 3, Dillon Bros., Normal, Ill	16 00
Stallion, 1 year old and under 2, Dillon Bros., Normal, Ill	8 00
Mare, 4 years old and over, Dillon Bros, Normal, Ill	20 00
Second, Indianapolis Imp. and Stock Co	10 00
Mare, 3 years old and under 4, Dillon Bros., Normal, Ill	16 00
Second, J. R. Ludlow, Irvington	8 00
Mare, 2 years old and under 3, Dillon Bros., Normal, Ill	12 00
Second, Dillon Bros., Normal, Ill	6 00
Mare, 1 year old and under 2, Indianapolis Imp. and Stock Co	8 00
Second, Dillon Bros., Normal, Ill	4 00
Sucking filly, Indianapolis Imp. and Stock Co.	6 00

Committee—A. W. Powell, B. A. Gable, Corydon; T. Buchanan, Lake County.

BOOK II—Clydesdale and English Draft.

Stallion, 4 years old and over, Simon Beattie, Scotland	$35 00
Second, Simon Beattie, Scotland	18 00
Stallion, 3 years old and under 4, Simon Beattie, Scotland	25 00
Second, Door Prairie Live Stock Association, Door Village	13 00
Stallion, 2 years old and under 3, Door Prairie Live Stock Association, Door Village	16 00
Stallion, 1 year old and under 2, Door Prairie Live Stock Ass'n, Door Village	8 00
Second, Simon Beattie, Scotland	4 00
Mare, 4 years old and over, Simon Beattie, Scotland	20 00
Second, Simon Beattie, Scotland	10 00
Mare, 3 years old and under 4, Simon Beattie, Scotland	16 00
Second, Simon Beattie, Scotland	8 00
Mare, 2 years old and under 3, Banks & Hill, Door Village	12 00
Mare, 1 year old and under 2, Banks & Hill, Door Village	8 00
Second, Door Prairie Stock Association, Door Village	4 00
Sucking filly, Banks & Hill, Door Village	6 00
Second, Simon Beattie, Scotland	3 00

Committee—James Craig, James Fullington and H. B. Sherman, of Marion County.

BOOK III—Heavy Draft Grade Horses.

Stallion, 4 years old and over, Simon Beattie, Scotland	$25 00
Second, Dillon Bros., Normal, Ill	13 00
Stallion, 3 years old and under 4, Cox & Gause, Carthage	16 00
Second, J. N. Huston, Connersville	8 00
Stallion, 2 years old and under 3, Door Prairie Live Stock Association, Door Village	12 00
Second, B. W. Shelburn, Zionsville	6 00
Stallion, 1 year old and under 2, Dillon Bros., Normal, Ill	8 00
Second, Dillon Bros., Normal, Ill	4 00
Stallion sucking colt, Dillon Bros., Normal, Ill	6 00
Mare, 4 years old and over, Wm. Boyd, Toronto, Canada	16 00
Second, Dillon Bros., Normal, Ill	8 00
Mare, 3 years old and under 4, C. Jeffries, Westfield	12 00
Second, Dillon Bros., Normal, Ill	6 00
Mare, 2 years old and under 3, Dillon Bros., Normal, Ill	10 00
Second, Cass County, Ind	5 00
Mare, 1 year old and under 2, J. N. Huston, Connersville	8 00
Second, J. N. Huston, Connersville	4 00
Gelding, 3 years old and over, Levy & Munter, Indianapolis	15 00
Second, P. B. Chambers, Thorntown	8 00

Heavy-draft team, Wm. Boyd, Toronto, Canada	$16 00
Second, Manson Head, Zionsville	8 00

Committee—P. A. Banks, Lake County; E. A. Gable, Harrison County, and W. H. Buchanan, Porter County.

BOOK IV—Horses for General Purposes.

Stallion, 4 years old and over, Brenman Brothers, Decatur, Ill	$35 00
Second, Daniel Brown, Rushville	18 00
Stallion, 3 years old and under 4, Hiatt Brothers, Knightstown	25 00
Second, John S. Moore, Plainfield	13 00
Stallion, 2 years old and under 3, Door Prairie Live Stock Association, Door Village	16 00
Second, R. Y. Hardin, Columbus	8 00
Stallion, 1 year old and under 2, Fort & Huston, Indianapolis	8 00
Second, F. Sharpe, Indianapolis	4 00
Stallion sucking colt, J. T. Hardin, Sabine	6 00
Mare, 4 years old and over, Fort & Huston, Indianapolis	20 00
Second, Hiatt Brothers, Knightstown	10 00
Mare, 3 years old and under 4, Allen W. Ensley, Edinburg	16 00
Second, J. T. Hardin, Sabine	8 00
Mare, 2 years old and under 3, Samuel Buchanan, Zionsville	12 00
Second, Hiatt Brothers, Knightstown	6 00
Mare, 1 year old and under 2, Lewis H. M. Brown, Indianapolis	$8 00
Second, J. C. Stanton, Carmel	4 00
Sucking filly, A. J. Stanley, McCordsville	6 00
Second, J. T. Hardin, Sabine	3 00
Gelding, 3 years old and over, H. Jackson, Mooresville	25 00
Second, Buck Dickerson, Greensburg	12 00
Pair geldings or mares, W. C. Nicholson, Indianapolis	20 00
Second, Wm. Thompson, New Carlisle, Ohio	10 00

Committee—H. B. Howland, City; Capt. J. W. Marshall, Harrison County, and J. W. Stillwell, Troy, Ohio.

BOOK V.—Light Harness Horses.

Stallion, 4 years old and over, Brenman Bros., Decatur, Ill.	$35 00
Second, Tom Levi, Noblesville	18 00
Stallion, 3 years old and under 4, Brenman Bros., Decatur, Ill.	25 00
Second, Tom Levi, Noblesville	13 00
Stallion, 2 years old and under 3, A. C. Remy, Indianapolis	16 00
Second, Tom Levi, Noblesville	8 00
Mare, 4 years old and over, Buck Dickerson, Greensburg	20 00
Second, Buck Dickerson, Greensburg	10 00

Mare, 3 years old and under 4, Walter S. Hall, Thorntown	$16 00
Second, Fort & Huston, Indianapolis	8 00
Mare, 2 years old and under 3, Daniel Brown, Rushville	12 00
Second, Elisha Carr, Charlestown	6 00
Gelding, 3 years old and over, J. A. Farrow, Oakland, Ill	25 00
Second, Oscar Vanderbilt, Indianapolis	12 00
Light harness team, Buck Dickerson, Greensburg	16 00
Second, Fort & Huston, Indianapolis	8 00
Stallion, gelding or mare, any age, Buck Dickerson, Greensburg	15 00
Second, John W. Fort, Indianapolis	7 00

Committee—G. W. Hall, Rush County; William Boggs, Tippecanoe County, and W. W. Hamilton, Decatur County.

BOOK VI—Sweepstakes on Horses.

Stallion of any age, draft, Simon Beattie, Scotland	$40 00
Stallion of any age, except heavy draft, Brenman Bros, Decatur, Ill	40 00
Stallion showing three best sucking colts, his get, general purposes, A. C. Remy, Indianapolis	10 00
Mare of any age, draft, Simon Beattie, Scotland	25 00
Mare, any age, except heavy draft, J. N. Huston, Connersville	25 00
Brood mare with sucking colt at foot, heavy draft, Simon Beattie, Scotland	10 00
Brood mare with sucking colt at foot, general purpose, A. J. Stanley, McCordsville	10 00
Brood mare with sucking colt at foot, light harness, A. C. Remy, Indianapolis	10 00
Herd of five, consisting of one stallion and four mares, heavy draft, to be owned by one exhibitor, Simon Beattie, Scotland	85 00
Second, Dillon Bros., Normal, Ill	45 00
Herd of five, consisting of one stallion and four mares, except heavy draft, owned by one exhibitor, Hiatt Bros., Knightstown	85 00
Second, Daniel Brown, Rushville	45 00

Committee—A. G. Vance, Johnson County; J. A. Thornburg, Henry County, and J. H. Shields, San Francisco, Cal.

BOOK VII—Jacks, Jennets and Mules.

Jack, 3 years old and over, A. C. Remy, Indianapolis	$16 00
Second, W. L. Caldwell, Danville	8 00
Jack, 2 years old and under 3, W. L. Caldwell, Danville, Ky	12 00
Second, Jno. G. Sweeney, Greencastle	6 00
Jack, 1 year old and under 2, W. L. Caldwell, Danville, Ky	8 00
Second, S. L Brown, Carmel	4 00
Jennet, 3 years old and over, W. L. Caldwell, Danville, Ky	8 00
Second, Jos. Lloyd, Greencastle	4 00
Jennet, 2 years old and under 3, W. L. Caldwell, Danville, Ky	6 00

Mule, 4 years old and over, J. M. Perry, Columbus	$10 00
Second, W. M. Cook, Glenwood	5 00
Mule, 3 years old and under 4, W. M. Cook, Glenwood	8 00
Second, J. M. Perry, Columbus	4 00
Mule, 2 years old and under 3, A. Sexton, Carmel	6 00
Second, A. Sexton, Carmel	3 00
Pair mules, 3 years old and over, J. M. Perry, Columbus	20 00
Second, W. M. Cook, Glenwood	10 00
Jack, any age, W. L. Caldwell, Danville, Ky	20 00
Jennet, any age, W. L. Caldwell, Danville, Ky	10 00
Jack, showing 3 best colts under 1 year old, Jos. Lloyd, Greencastle	20 00

Committee—C. A. Berry, John Hilt and J. M. Adamson, Covington, Ind.

BOOK VIII—Speed List.

Three-year-old Trot—Purse $130:

Geo. Cutsinger, Edinburg, Ind.	$70 00
James Hazelton, Decatur, Ill	45 00
J. A. Farrow, Oakland, Ill	15 00

2:37 Pace—Purse $130:

J. H. Jackson, Kokomo, Ind	70 00
J. A. Farrow, Oakland, Ill.	45 00
J. H. Wilcox, Crawfordsville, Ind	15 00

2:37 Trot—Purse $170:

H. W. Ryan, Danville, Ill	85 00
A. Hams, Paris, Ill	60 00
Wm. Price, Raleigh, Ind.	25 00

Three-Minute Trot—Purse $170:

L. E. George, Noblesville, Ind	85 00
Joshua Mallory, Raleigh, Ind	60 00
E. Carr, Charlestown, Ind	25 00

Running Race, one mile and repeat—Purse $130:

Mrs. S. J. St. Clair, Indianapolis	35 00
Charles St. Clair, Indianapolis.	22 50
Tom. Levi, Noblesville, Ind.	Distanced.

Free-for-all Pace—Purse $255.

Thomas Lynn, Jerseyville, Ill	140 00
John Wade, Salem, Ind.	75 00
W. M. Jones, Rushville, Ind.	40 00

2:30 Trot—Purse $200:

Chas. Frost, Cambridge City, Ind	$100 00
John Lackey, Cambridge City, Ind.	65 00
Amola Hanes, Paris, Ill.	35 00

Stallion Trot—Purse $130:

John Lackey, Cambridge City, Ind.	70 00
E. N. Hyland, Rensselaer, Ind.	45 00
Buck Dickerson, Greensburg, Ind	15 00

Free-for-all Trot—Purse $150:

Norris & Grant, Pittsburg, Ky.	85 00
J. G. Paxton, Martinsville, Ind	50 00
H. W. Ryan, Danville, Ill.	25 00

Committee of Judges—D. Webb, Fountain County; G. W. Hall, Rush County; J. M. Adamson, Fountain County; George Bremmerman, city; A. W. Powell, city.

CATTLE.

J. N. Davidson and J. M. Boggs, Superintendents.

BOOK IX—*Shorthorns*.

Bull, 3 years old and over, Shepherd, Hill & Mathers, Jacksonville, Ill.	$25 00
Second, Thos. Wilhoit, Middletown	12 00
Bull, 2 years old and under 3, Thos. Wilhoit, Middletown	20 00
Second, Thos. Wilhoit, Middletown	10 00
Bull, 1 year old and under 2, Shepherd, Hill & Mathers, Jacksonville, Ill	16 00
Second, W. F. Christian, Indianapolis	8 00
Bull calf, Thos. Wilhoit, Middletown.	8 00
Cow, 3 years old and over, Thos. Wilhoit, Middletown	25 00
Second, Thos. Wilhoit, Middletown.	12 00
Cow, 2 years old and under 3, Thos. Wilhoit, Middletown	20 00
Second, Thos. Wilhoit, Middletown.	10 00
Hiefer, 1 year old and under 2, Shepherd, Hill & Mathers, Jacksonville, Ill	16 00
Second, Thos. Wilhoit, Middletown.	8 00
Hiefer calf, Shepherd, Hill & Mathers, Jacksonville, Ill	8 00
Second, Thos. Wilhoit, Middletown.	4 00

Committee—C. W. Waterman, Parke County; R. M. Munford, Gibson County; Jas. A. Mount, Montgomery County.

BOOK X—*Herefords.*

Bull, 3 years old and over, Frank H. Johnson & Co., South Bend	$25 00
Second, Ind. Blooded Stock Co., Indianapolis	12 00
Bull, 2 years old and under 3, Ind. Blooded Stock Co., Indianapolis	20 00
Second, Frank H. Johnson & Co., South Bend	10 00
Bull, 1 year old and under 2, Ind. Blooded Stock Co., Indianapolis	16 00
Bull calf, Ind. Blooded Stock Co., Indianapolis	8 00
Second, Frank H. Johnson & Co., South Bend	4 00
Cow, 3 years old and over, Ind. Blooded Stock Co., Indianapolis	25 00
Second, Frank H. Johnson & Co., South Bend	12 00
Cow, 2 years old and under 3, Ind. Blooded Stock Co., Indianapolis	20 00
Heifer, 1 year old and under 2, Frank H. Johnson & Co., South Bend	16 00
Second, Frank H. Johnson & Co., South Bend	8 00
Heifer calf, Ind. Blooded Stock Co., Indianapolis	8 00

Committee—Harvey Lewis, Johnson County; John Lewis, Tippecanoe County; J. B. Gerard, Blackford County.

BOOK XI—*All Polled Breeds.*

Bull, 2 years old and under 3, Ind. Blooded Stock Co., Indianapolis	$20 00
Bull calf, Ind. Blooded Stock Co., Indianapolis	8 00
Cow, 3 years old and over, Ind. Blooded Stock Co., Indianapolis	25 00
Heifer, 1 year old and under 2, Ind. Blooded Stock Co., Indianapolis	16 00
Heifer calf, Ind. Blooded Stock Co., Indianapolis	8 00
Second, Ind. Blooded Stock Co., Indianapolis	4 00

Committee—Same as Book 10.

BOOK XII—*Jerseys.*

Bull, 3 years old and over, W. J. Hasselman, Indianapolis	$25 00
Second, Frank H. Johnson & Co., South Bend	12 00
Bull, 2 years old and under 3, Ed. D. Porter, Indianapolis	20 00
Second, W. A. Ketcham, Indianapolis	10 00
Bull, 1 year old and under 2, W. J. Hasselman, Indianapolis	16 00
Second, Frank H. Johnson & Co., South Bend	8 00
Bull calf, W. J. Hasselman, Indianapolis	8 00
Second, Theo. P. Haughey, Indianapolis	4 00
Cow, 3 years old and over, Theo. P. Haughey, Indianapolis	25 00
Second, W. J. Hasselman, Indianapolis	12 00
Cow, 2 years and under 3, W. J. Hasselman, Indianapolis	20 00
Second, Garretson Bros., Pendleton	10 00
Heifer, 1 year old and under 2, Garretson Bros., Pendleton	16 00
Second, Garretson Bros., Pendleton	8 00
Heifer calf, W. J. Hasselman, Indianapolis	8 00
Second, H. H. Wheatcraft, Southport	4 00

Committee—J. W. McKinster, Harrison County; Thomas B. Wood, Johnson County; George W. Johnson, Dearborn County.

BOOK XIII—Devons.

Bull, 3 years old and over, Rumsey Bros., Westfield, N. Y	$25 00
Second, Irvin York, Brock, Ohio	12 00
Bull, 2 years old and under 3, J. L. Crawford, Oakland City	20 00
Second, Irvin York, Brock, Ohio.	10 00
Bull, 1 year old and under 2, D. J. Whitmore, Casstown, Ohio	16 00
Second, J. L. Crawford, Oakland City	8 00
Bull calf, D. J. Whitmore, Casstown, Ohio	8 00
Second, D. J. Whitmore, Casstown, Ohio	4 00
Cow, 3 years old and over, D. J. Whitmore, Casstown, Ohio	25 00
Second, D. J. Whitmore, Casstown, Ohio	12 00
Cow, 2 years old and under 3, D. J. Whitmore, Casstown, Ohio	20 00
Second, Rumsey Bros., Westfield, N. Y.	10 00
Heifer, 1 year old and under 2, D. J. Whitmore, Casstown, Ohio	16 00
Second, J. L. Crawford, Oakland City	8 00
Heifer calf, D. J. Whitmore, Casstown, Ohio	8 00
Second, Irvin York, Brock, Ohio	4 00

Committee—Harvey Lewis, Johnson County; J. Scarff, New Carlisle; R. M. Mumford, Gibson County.

BOOK XV—Holsteins.

Bull, 3 years old and over, J. W. Stillwell & Co., Troy, Ohio	$25 00
Second, F. C. Stevens, Attica, N. Y.	12 00
Bull, 2 years old and under 3, J. W. Stillwell & Co., Troy, Ohio.	20 00
Second, F. C. Stevens, Attica, N. Y.	10 00
Bull, 1 year old and under 2, F. C. Stevens, Attica, N. Y.	16 00
Second, Jos. A. Moore, Indianapolis	8 00
Bull calf, F. C. Stevens, Attica, N. Y.	8 00
Second, J. W. Stillwell, Troy, Ohio	4 00
Cow, 3 years old and over, F. C. Stevens, Attica, N. Y	25 00
Second, J. W. Stillwell, Troy, Ohio	12 00
Cow, 2 years old and under 3, J. W. Stillwell, Troy, Ohio	20 00
Second, F. C. Stevens, Attica, N. Y.	10 00
Heifer, 1 year old and under 2, S. W. Dungan, Franklin.	16 00
Second, F. C. Stevens, Attica, N. Y.	8 00
Heifer calf, F. C. Stevens, Attica, N. Y.	8 00
Second, J. W. Stillwell & Co., Troy, Ohio.	4 00

Committee—Harvey Lewis, Johnson County; J. D. Owen, Posey County, and E. S. Bowman, Louisville, Ky.

BOOK XVI—Sweepstakes—Beef Breeds of Cattle.

Bull, any age or breed, Shepherd, Hill & Mathers, Jacksonville, Ill	$30 00
Cow, any age or breed, Thos. Wilhoit, Middletown.	25 00

Committee—Thos. Nelson, Parke County; Simon Beattie, Scotland; Jas. Fullington, Irwin, Ohio.

BOOK XVI—Sweepstakes—Milk Breeds of Cattle.

Bull, any age or breed, Frank H. Johnson & Co., South Bend	$30 00
Cow, any age or breed, F. C. Stevens, Attica, N. Y	25 00

Committee—Harvey Lewis, Johnson County; T. J. Scarff and W. C. Norton.

HERDS—Breeds of Beef Cattle.

Herd of five head, consisting of 1 bull 2 years or over, 1 cow 3 years old or over, 1 heifer, 2 years old and under 3, 1 heifer 1 year old and under 2, 1 heifer calf under 1 year old, Thos. Wilhoit, Middletown	$200 00
Second, Shepherd, Hill & Mathers, Jacksonville, Ill	100 00
Best young herd of beef cattle, to consist of 1 bull and 4 heifers, all under 2 years of age, Shepherd, Hill & Mathers, Jacksonville, Ill	80 00
Second, Thos. Wilhoit, Middletown	40 00

BOOK XVII—Milk Cattle—Jerseys, Ayrshires, Holsteins and Devons.

Herd, consisting of 1 bull, 2 years old or over, 1 cow, 3 years old or over, 1 heifer, 2 years old and under 3, 1 heifer, 1 year old and under 2, heifer calf, 1 year old, J. W. Stillwell & Co., Troy, Ohio	$200 00
Second, F. C. Stevens, Attica, N. Y	100 00

Committee—Harvey Lewis, Johnson County; T. J. Scarff, New Carlisle, Ohio, and W. C. Norton, Aldenville, Pa.

SHEEP.

J. Q. A. Sieg, Superintendent.

BOOK XVIII—Fine Wool Sheep; to Include American, Spanish amd French Merinos.

Buck, 2 years old and over, Cook & Morse, Raymonds, O.	$12 00
Second, Uriah Privett & Bro., Greensburg	6 00
Buck, 1 year old and under 2, Cook & Morse, Raymonds, O.	8 00
Second, Cook & Morse, Raymonds, O	4 00
Buck lamb, Cook & Morse, Raymonds, O	6 00
Second, U. Privett & Bro., Greensburg	3 00
Ewe, 2 years old and over, Cook & Morse, Raymonds, O	10 00
Second, Cook & Morse, Raymonds, O	5 00
Ewe, 1 year old and under 2, Cook & Morse, Raymonds, O	6 00
Second, Uriah Privett & Bro., Greensburg	3 00

Ewe lamb, Uriah Privett & Bro., Greensburg	$5 00
Second, Cook & Morse, Raymonds, O.	3 00
Five lambs, Cook & Morse, Raymonds, O.	8 00
Second, Uriah Privett & Bro., Greensburg	4 00

Committee—J. W. Robe, Putnam County, and A. W. Cole, Laporte County.

BOOK XIX—*Long-Wool Sheep, Cotswolds, Leicester or Lincolns.*

Buck, 2 years old and over, J. B. Kerkless, Knightstown	$12 00
Second, Uriah Privett & Bro., Greensburg	6 00
Buck, 1 year old and under 2, Uriah Privett & Bro., Greensburg	8 00
Second, J. G. Snell & Bro , Edmundton, Can	4 00
Buck lamb, Frank Wilson, Jackson, Mich	6 00
Second, J. B. Kerkless, Knightstown	3 00
Ewe, 2 years old and over, Uriah Privett & Bro., Greensburg	10 00
Second, Uriah Privett & Bro., Greensburg	5 00
Ewe, 1 year old and under 2, J. G. Snell & Bro., Edmundton, Canada	6 00
Second, J. B. Kerkless, Knightstown	3 00
Ewe lamb, J. B. Kerkless, Knightstown	5 00
Second, J. G. Snell & Bro., Edmundton, Canada	3 00
Five lambs, J. B. Kerkless, Knightstown	8 00
Second, Frank Wilson, Jackson, Mich.	4 00

Committee—Chas. Martin, Harrison County, A. W. Cole and John T. Deutsch.

BOOK XX—*Southdowns.*

Buck, 2 years old and over, Uriah Privett & Bro., Greensburg	$12 00
Second, Uriah Privett & Bro., Greensburg	6 00
Buck, 1 year old and under 2, E. Stanford, Markham, Canada	8 00
Second, Uriah Privett & Bro., Greensburg	4 00
Buck, lamb, E. Stanford, Markham, Canada	6 00
Second, E, Stanford, Markham, Canada	3 00
Ewe, 2 years old and over, E. Stanford, Markham, Canada	10 00
Second, Uriah, Privett & Bro, Greensburg	5 00
Ewe. 1 year old and under 2, E. Standford, Markham, Canada	6 00
Second, Uriah Privett & Bro., Greensburg	3 00
Ewe lamb, Uriah Privett & Bro., Greensburg	5 00
Second, E. Stanford, Markham, Canada	3 00
Five lambs, E. Stanford, Markham, Canada	8 00
Second, Uriah Privett & Bro., Greensburg	4 00

Committee—A. W. Cole, Laporte County; T. C. Phelps, Greensboro, and J. W. McKinster, Harrison County.

BOOK XXI—Oxfordshire, Shropshire and Hampshire.

Buck, 2 years old and over, Uriah Privett & Bro., Greensburg	$12 00
Second, Thompson & Privett, Arcana	6 00
Buck, 1 year old and under 2, Simon Beattie, Scotland	8 00
Second, Uriah Privett & Bro., Greensburg	4 00
Buck lamb, Simon Beattie, Scotland	6 00
Second, Thompson & Privett, Arcana	3 00
Ewe, 2 years old and over, Uriah Privett & Bro, Greensburg	10 00
Second, Thompson & Privett, Arcana	5 00
Ewe, 1 year old and under 2, Uriah Privett & Bro., Greensburg	6 00
Second, Uriah Privett & Bro., Greensburg	3 00
Ewe lamb, Thompson & Privett, Arcana	5 00
Second, Thompson & Privett, Arcana	3 00
Five lambs, Thompson & Privett, Arcana	8 00
Second, Uriah Privett & Bro., Greensburg	4 00

Committee—W. M. Wiley, Boone County; E. M. Litz, Wabash County, and T. R. Tomlinson.

BOOK XXII—Sweepstakes on Sheep—Fine Wool.

Buck, any age, Cook & Morse, Raymonds, Ohio	$20 00
Ewe, any age, Cook & Morse, Raymonds, Ohio	20 00
Flock, consisting of 1 buck and 2 ewes 2 years old and under 3; 2 ewes 1 year old and under 2, and 2 ewes under 1 year old, Cook & Morse, Raymonds, Ohio	30 00
Second, Uriah Privett & Bro., Greensburg	15 00

Committee—J. W. Robe, Putnam County; C. L. Fetzer, Harrison County, and T. C. Phelps, Greensboro, Ind.

BOOK XXIII—Sweepstakes—Long Wool.

Buck, any age, J. G. Snell & Bro., Edmundton, Canada	$20 00
Ewe, any age, Uriah Privett & Bro., Greensburg	20 00
Flock, consisting of 1 buck and 2 ewes 2 years old and under 3; 2 ewes 1 year old and under 2, and 2 ewes under 1 year old, Frank Wilson, Jackson, Mich	30 00
Second, Uriah Privett & Bro., Greensburg	15 00

Committee—C. L. Fetzer, Harrison County; J. W. Robe, Putnam County, and T. I. Byars.

BOOK XXIV—Sweepstakes—Middle Wool.

Buck, any age, Thompson & Privett, Arcana	$20 00
Ewe, any age, Simon Beattie, Scotland	20 00
Flock, consisting of 1 buck and 2 ewes two years old and under three, 2 ewes one year old and under two, and 2 ewes under one year old, Thompson & Privett, Arcana	30 00
Second, Uriah Privett & Bro., Greensburg	15 00

Committee—T. C. Phelps, Greensboro, Ind.; Perry Kesling, Onward, Ind., and Carter L. Fetzer, Corydon, Ind.

HOGS.

Dick Jones, Superintendent.

BOOK XXV—Berkshires.

Boar, 2 years old and over, Gilmore & Hamilton, Greensburg	$12 00
Second, J. G. Snell & Bro., Edmundton, Canada	6 00
Boar, 1 year old and under 2, J. G. Snell & Bro., Edmundton, Canada	10 00
Second, Gilmore & Hamilton, Greensburg	5 00
Boar, under 12 and over 6 months old, J. G. Snell & Bro., Edmundton, Canada	8 00
Second, I. N. Barker, Thorntown	4 00
Boar, under 6 months old, I. N. Barker, Thorntown	5 00
Second, Andy Martin, Muncie	3 00
Sow, 2 years old and over, D. W. Todd & Sons, Urbana, Ohio	12 00
Second, D. W. Tood & Sons, Urbana, Ohio	6 00
Sow, 1 year old and under 2, J. G. Snell & Bro., Edmundton, Canada	10 00
Second, Jasper Heck, Waldron	5 00
Sow, under 12 and over 6 months old, Andy Martin, Muncie	8 00
Second, M. Hebblethwait, Berlinville, Ohio	4 00
Sow, under 6 months old, I. N. Barker, Thorntown	5 00
Second, Andy Martin, Muncie	3 00
Five shoats, under 6 months old, I. N. Barker, Thorntown	10 00
Second, Jacob Kennedy, Montclair	5 00
Sow and not less than five sucking pigs, M. Hebblethwait, Berlinville, Ohio	10 00
Second, W. A. Maze, Sharpsville	5 00

Committee—J. B. Gerard, Jacob Kennedy and B. Mahanna.

BOOK XXVI—Poland China.

Boar, 2 years old and over, Gilmore & Hamilton, Greensburg	$12 00
Second, W. C. Williams & Co., Knightstown	6 00
Boar, 1 year old and under 2, Brown & Hinshaw, Rural	10 00
Second, W. C. Williams & Co., Knightstown	5 00
Boar, under 12 and over 6 months old, Lampe Bros., Van Wert, Ohio	8 00
Second, Mugg & Seagrave, Center	4 00
Boar, under 6 months old, Brown & Henshaw, Rural	5 00
Second, Peter Stedham, Burton	3 00
Sow, 2 years and over, W. C. Williams & Co., Knightstown	12 00
Second, Lampe Bros., Van Wert, Ohio	6 00
Sow, 1 year old and under 2, Mugg & Seagrave, Center	10 00
Second, Shepherd Bros., Indianapolis	5 00
Sow, under 12 and over 6 months old, Gilmore & Hamilton, Greensburg	8 00
Second, Richardson & Magrew, Westville, Ohio	4 00
Sow, under 6 months old, Mugg & Seagrave, Center	5 00
Second, A. W. Ross, Muncie	3 00
Five shoats, under 6 months old, Mugg & Seagrave, Center	10 00
Second, Brown & Henshaw, Rural	5 00
Sow and not less than five sucking pigs, Shepherd Bros., Indianapolis	10 00

Committee—T. W. Reveal, Marion County; James B. Miller, Hartford, Ohio County, and S. E. Hollingsworth, Knox County.

BOOK XXVII—Other Large Breeds.

Boar, 2 years old and over, H. McCord, McCordsville	$12 00
Second, R. S. Russell, Zionsville	6 00
Boar, 1 year old and under 2, R. S. Russell, Zionsville	10 00
Second, Irvin York, Brock, Ohio	5 00
Boar, under 12 and over 6 months old, R. S. Russell, Zionsville	8 00
Second, H. McCord, McCordsville	4 00
Boar, under 6 months old, E. R. Moody, Eminence, Ky	5 00
Second, H. McCord, McCordsville	3 00
Sow, 2 years old and over, H. McCord, McCordsville	12 00
Second, Irvin York, Brock, Ohio,	6 00
Sow, 1 year old and under 2, Irvin York, Brock, Ohio	10 00
Second, H. McCord, McCordsville	5 00
Sow, under 12 and over 6 months old, R. S. Russell, Zionsville	8 00
Second, H. McCord, McCordsville	4 00
Sow, under 6 months old, E. R. Moody, Eminence, Ky	5 00
Second, E. R. Moody, Eminence, Ky	3 00
Five shoats, under 6 months old, E. R. Moody, Eminence, Ky	10 00
Second, H. McCord, McCordsville	5 00
Sow and not less than 5 sucking pigs, Irvin York, Brock, Ohio	10 00
Second, H. McCord, McCordsville	5 00

Committee—A. S. Gilmour, Decatur County.

BOOK XXVIII—Suffolk, Essex, Their Crosses and Other Small Breeds, Regardless of Color.

Boar, 2 years old and over, W. C. Norton, agent, Aldenville, Pa	$12 00
Second, Jos. Featherston, Credit Postoffice, Canada	6 00
Boar, 1 year old and under 2, Frank Wilson, Jackson, Mich	10 00
Second, W. C. Norton, agent, Aldenville, Pa.	5 00
Boar, under 12 and over six months old, W. C. Norton, agent, Aldenville, Pa.	8 00
Second, Jos. Featherston, Credit Postoffice, Canada	4 00
Boar, under 6 months old, W. C. Norton, agent, Aldenville, Pa	5 00
Second, Jos. Featherston, Credit Postoffice, Canada	3 00
Sow, 2 years old and over, W. C. Norton, agent, Aldenville, Pa	12 00
Second, W. C. Norton, agent, Aldenville, Pa.	6 00
Sow, 1 year old and under 2, Frank Wilson, Jackson, Mich.	10 00
Second, A. C. Green & Co., Winchester	5 00
Sow, under 12 and over 6 months old, James Featherston, Credit Postoffice, Canada	8 00
Second, W. C. Norton, agent, Aldenville, Pa.	4 00
Sow, under 6 months old, W. C. Norton, agent, Aldenville, Pa	5 00
Second, Jos. Featherston, Credit P. O., Can	3 00
Five shoats, under 6 months old, W. C. Norton, agent, Aldenville, Pa	10 00
Second, Jos. Featherston, Credit P. O., Can	5 00
Sow and not less than 5 sucking pigs, A. C. Green & Co., Winchester	10 00
Second, Frank Wilson, Jackson, Mich	5 00

Committee—Harvey Lewis, Johnson County; Jacob Kennedy, Mount Clair, Ind., and Jasper Heck, Waldron, Ind.

BOOK XXIX—Sweepstakes on Hogs. Poland Chinas, Chester Whites, Jersey Reds, and Other Large Breeds.

Boar, any age, Lampe Bros., Van Wert, O	$20 00
Sow, any age, W. C. Williams & Co., Knightstown	20 00
Herd, all owned by one exhibitor or firm, W. C. Williams & Co., Knightstown	40 00
Second, Richardson & Magrew, Westville, O	20 00

Committee—James A. Stephen, Somerville, O.; Park H. Hammond, Oneida, Ill., and Will T. Evans, Benton County.

BOOK XXX—Berkshires, Essex, Suffolks, and Other Small Breeds.

Boar, any age, Gilmore & Hamilton, Greensburg	$20 00
Sow, any age, D. W. Todd & Sons, Urbana, O.	20 00
Herd, all owned by one exhibitor or firm, D. W. Todd & Sons, Urbana, O	40 00
Second, Jasper Heck, Waldron	20 00

Committee—T. C. Phelps, Henry County; Jno. Jones, Bartholomew County, and R. M. Munford, Gibson County.

POULTRY.

John Ratliff, Superintendent.

BOOK XXXI.

Pair light Brahma fowls, Jacob Kennedy & Co., Mount Clair	$4 00
Second. D. F. Highley, Mur	2 00
Pair light Brahma chicks, I. N. Barker, Thorntown	4 00
Second, I. N. Barker, Thorntown	2 00
Pair dark Brahma fowls	
Second, S. E. Wurst, Elyria, O.	2 00
Pair dark Brahma chicks, S. E. Wurst, Elyria, O	4 00
Second, S. E. Wurst, Elyria, O	2 00
Pair buff Cochin fowls, S. E. Wurst, Elyria, O	4 00
Second, F. M. Carey, Morristown	2 00
Pair buff Cochin chicks, Frank B. Smith, Danville	4 00
Second, Henry Allen & Co., Bloomingdale	2 00
Pair Partridge Cochin fowls, E. K. Morris, Indianapolis	4 00
Second, S. E. Wurst, Elyria, O	2 00
Pair Partridge Cochin chicks, I. N. Barker, Thorntown	4 00
Second, E. K. Morris, Indianapolis	2 00
Pair white Cochin fowls, G. A. Stanton, Greenwood	4 00
Second, S. E. Wurst, Elyria, O	2 00
Pair white Cochin chicks, Frank B. Smith, Danville	4 00
Second, Frank B. Smith, Danville	2 00
Pair black Cochin fowls, B. F. Hill, Indianapolis	4 00
Second, S. E. Wurst, Elyria, O.	2 00
Pair black Cochin chicks, B. F. Hill, Indianapolis	4 00
Second, B. F. Hill, Indianapolis	2 00
Pair black Java fowls, S. E. Wurst, Elyria, O	4 00
Pair black Java chicks, S. E. Wurst, Elyria, O	4 00
Pair Langshan fowls, Thomas W. Pottage, Indianapolis	3 00
Second, S. E. Wurst, Elyria, Ohio	1 00
Pair Langshan chicks, Thomas W. Pottage, Indianapolis	3 00
Second, Thomas W. Pottage, Indianapolis	1 00
Pair Plymouth Rock fowls, Sid Conger, Flat Rock	4 00
Second, Sid Conger, Flat Rock	2 00
Pair Plymouth Rock chicks, Sid Conger, Flat Rock	4 00
Second, Sid Conger, Flat Rock	2 00
Pair White Leghorn fowls, Elstun & Tobin, Indianapolis	3 00
Second, S. E. Wurst, Elyria, Ohio	1 00
Pair White Leghorn chicks, Henry Allen & Co., Bloomingdale	3 00
Second, Elstun & Tobin, Indianapolis	1 00

Pair Brown Leghorn fowls, Thomas W. Pottage, Indianapolis	$3 00
Second, S. E. Wurst, Elyria, Ohio	1 00
Pair Brown Leghorn chicks, Thomas W. Pottage, Indianapolis	3 00
Second, Henry Allen & Co., Bloomingdale	1 00
Pair Black Leghorn fowls, J. P. Buroker, Sweetser.	3 00
Second, S. E. Wurst, Elyria, Ohio	1 00
Pair Black Leghorn chicks, B. F. Hill, Indianapolis	3 00
Second, J. P. Buroker, Sweetser	1 00
Pair W. F. Black Spanish fowls, G. A. Stanton, Greenwood	3 00
Second, S. E. Wurst, Elyria, Ohio	1 00
Pair W. F. Black Spanish chicks, G. A. Stanton, Greenwood	3 00
Second, G. A. Stanton, Greenwood	1 00
Pair W. C. Black Polish fowls, S. E. Wurst, Elyria, Ohio	3 00
Second, S. E. Wurst, Elyria, Ohio	1 00
Pair W. C. Black Polish chicks, I. N. Barker, Thorntown	3 00
Second, P. O. Updegraff, Irvington	1 00
Pair bearded W. C. White Polish fowls, S. E. Wurst, Elyria, Ohio	3 00
Pair golden Polish fowls or chicks, J. R. Buroker, Sweetser	3 00
Second, J. R. Buroker, Sweetser	1 00
Pair silver Polish fowls or chicks, D. F. Highley, Mur	3 00
Pair Houdan fowls, Charles Styer, Kokomo	3 00
Second, S. E. Wurst, Elyria, Ohio	1 00
Pair Houdan chicks, Charles Styer, Kokomo	3 00
Second, Sid. Conger, Flat Rock	1 00
Pair golden Hamburg fowls, S. E. Wurst, Elyria, Ohio	3 00
Second, S. E. Wurst, Elyria, Ohio	1 00
Pair golden Hamburg chicks, S. E. Wurst, Elyria, Ohio	3 00
Pair silver Hamburg fowls, S. E. Wurst, Elyria, Ohio	3 00
Pair silver Hamburg chicks, S. E. Wurst, Elyria, Ohio	3 00
Pair black Hamburg fowls, G. A, Stanton, Greensburg	3 00
Second, S. E. Wurst, Elyria, Ohio	1 00
Pair black Hamburg chicks, Charles Styer, Kokomo	3 00
Second, G. A. Stanton, Greensburg	1 00
Pair white Dorking chicks, S. E. Wurst, Elyria, Ohio	3 00
Pair colored Dorking fowls, G. A. Stanton, Greensburg	3 00
Pair colored Dorking chicks, G. A. Stanton, Greensburg	3 00
Second, S. E. Wurst, Elyria, Ohio	1 00
Pair black-breasted red Game fowls, S. E. Wurst, Elyria, Ohio	3 00
Second, P. O. Updegraff, Irvington	1 00
Pair black-breasted red Game chicks, S. E. Wurst, Elyria, Ohio	3 00
Second, P. O. Updegraff, Irvington	1 00
Pair yellow duck-wing game fowls, S. E. Wurst, Elyria, Ohio	3 00
Pair yellow duck-wing game chicks, S. E. Wurst, Elyria, Ohio	3 00
Pair silver duck-wing game fowls, S. E. Wurst, Elyria, Ohio	3 00
Pair silver duck-wing game chicks, S. E. Wurst, Elyria, Ohio	3 00
Second, P. O. Updegraff, Irvington	1 00

Pair B. B. red game bantam fowls, D. Highley, Mur	$3 00
Second, S. E. Wurst, Elyria, Ohio	1 00
Pair B. B. red game bantam chicks, D. F. Highley, Mur	3 00
Second, S. E. Wurst, Elyria, Ohio	1 00
Pair yellow duck-wing game bantam fowls, S. E. Wurst, Elyria, Ohio	3 00
Second, D. F. Highley, Mur	1 00
Pair yellow duck-wing game bantam chicks, D. F. Highley, Mur	3 00
Second, S. E. Wurst, Elyria, Ohio	1 00
Pair golden Seabright bantam fowls, I. N. Barker, Thorntown	3 00
Second, Frank B. Smith, Danville	1 00
Pair golden Seabright bantam chicks, I. N. Barker, Thorntown	3 00
Second, Frank B. Smith, Danville	1 00
Pair silver Seabright bantam fowls, I. N. Barker, Thorntown	3 00
Pair silver Seabright bantam chicks, S. E. Wurst, Elyria, Ohio	3 00
Second, D. F. Highley, Mur	1 00
Pair rose-comb bantam fowls or chicks, S. E. Wurst, Elyria, Ohio	3 00
Second, S. E. Wurst, Elyria, Ohio	1 00
Pair bronze turkeys, old birds, H. C. G. Bals, Indianapolis	4 00
Second, H. C. G. Bals, Indianapolis	2 00
Pair bronze turkeys, hatch of 1885, Wm. H. Woods, Stilesville	4 00
Second, Wm. H. Woods, Stilesville	2 00
Pair white Holland turkeys, old birds, E. K. Morris, Indianapolis	4 00
Second, G. A. Stanton, Greenwood	2 00
Pair white Holland turkeys, hatch of 1885, W. A. Ennis, Clermont	4 00
Second, G. A. Stanton, Greenwood	2 00
Pair Embden geese, W. A. Ennis, Clermont	4 00
Second, W. A. Ennis, Clermont	2 00
Pair Toulouse geese, H. C. G. Bals, Indianapolis	4 00
Second, H. A. Smith, Danville	2 00
Pair Chinese geese, W. A. Ennis, Clermont	4 00
Second, S. E. Wurst, Elyria, Ohio	2 00
Pair wild geese, W. A. Ennis, Clermont	3 00
Second, W. A. Ennis, Clermont	1 00
Pair Pekin ducks, D. F. Highley, Mur	3 00
Second, Mrs. Lizzie Schallschmidt, Indianapolis	1 00
Pair Rouen ducks, H. C. G. Bals, Indianapolis	3 00
Second, S. E. Wurst, Elyria, Ohio	1 00
Pair Aylesbury ducks, S. E. Wurst, Elyria, Ohio	3 00
Pair Cayuga ducks, S. E. Wurst, Elyria, Ohio	3 00
Heaviest live turkey, G. A. Stanton, Greenwood	4 00
Heaviest cock or cockerel, C. W. Neal (11¼ lbs.), Marion	3 00
Heaviest hen or pullet, Mary B. Danly (11 lbs.), Indianapolis	2 00
Brood of chicks under 1 week old, pure bred, E. K. Morris, Indianapolis	3 00
Pair Wyandot fowls, Sid Conger, Flat Rock	3 00
Second, F. U. Coney, Morristown	1 00

Committee—W. F. Christian, city, and D. H. Jenkins, city.

AGRICULTURAL DEPARTMENT.

H. LaTourette, Superintendent.

BOOK XXXII—Vegetables.

Three cauliflowers, A. Beyer, South Bend	$2 00
Second, John Marvel, Royalton	1 00
Six vegetable eggs, D. Ellwanger & Son, Haughville	2 00
Second, John Marvel, Royalton	1 00
Six cucumbers, D. Ellwanger & Son, Haughville	2 00
Second, John Marvel, Royalton	1 00
Peck white beans, John Marvel, Royalton	2 00
Second, A. G. Chandlee, Indianapolis	1 00
Two quarts Lima beans, D. Ellwanger & Son, Haughville	2 00
Second, John Marvel, Royalton	1 00
Half gallon garden peas, dry, J. A. Norwood, Southport	2 00
Second, John Marvel, Royalton	1 00
Half gallon field peas, dry, A. Beyer, South Bend	2 00
Second, D. Ellwanger & Son, Haughville	1 00
Half peck peppers for pickling, John Becker, Indianapolis	2 00
Second, John Marvel, Royalton	1 00
Peck tomatoes, A. Beyer, South Bend	2 00
Second, Charles Montgomery, Indianapolis	1 00
Collection tomatoes, John Marvel, Royalton	5 00
Second, D. Ellwanger & Son, Haughville	3 00
Half dozen ears green sweet corn, W. H. Hartman, Indianapolis	2 00
Second, James Riley, Thorntown	1 00
Half peck dry sweet corn, John Marvel, Royalton	2 00
Second, James Riley, Thorntown	1 00
Three squashes, any kind, A. D. Craig, Indianapolis	2 00
Second, D. Ellwanger & Son, Haughville	1 00
Three pumpkins, H. A. Woodruff, Tipton	2 00
Second, Sugar Valley Seed Co., Thorntown	1 00
Three Drum Head cabbages, A. Beyer, South Bend, Ind	2 00
Second, D. Ellwanger & Son, Haughville	1 00
Three Flat Dutch cabbages, A. Beyer, South Bend	2 00
Second, John Marvel, Royalton	1 00
Three heads cabbage, any other kind, A. Beyer, South Bend	2 00
Second, D. Ellwanger & Son, Haughville	1 00
Dozen stalks celery, A. Beyer, South Bend	2 00
Second, John Marvel, Royalton	1 00
Collection vegetables by one amateur exhibitor, John Marvel, Royalton	10 00
Second, John Becker, Indianapolis	5 00

Collection vegetables by one professional exhibitor, D. Ellwanger & Son, Haughville	$10 00
Second, Wm. Grosse, Lawrence	5 00

Committee—John Tilson, Jacob Dill and A. F. Murphy.

BOOK XXXIII—Root Crops.

Half bushel turnips, John Becker, Indianapolis	$2 00
Second, A. C. Swift, Glenwood	1 00
Dozen parsnips, Frank Williamson, Zionsville	2 00
Second, John Marvel, Royalton	1 00
Dozen radishes, John Marvel, Royalton	2 00
Second, A. Beyer, South Bend	1 00
Dozen carrots, Frank Williamson, Zionsville	2 00
Second, Aug. Beyer, South Bend	1 00
Dozen roots salsify, John Marvel, Royalton	2 00
Second, John Becker, Indianapolis	1 00
Dozen horseradish, D. Ellwanger & Son, Haughville	2 00
Second, Aug. Beyer, South Bend	1 00
Half dozen red beets, Sylvester Johnson, Irvington	2 00
Second, Wm. Grosse, Lawrence	1 00
Half dozen turnip beets, Sylvester Johnson, Irvington	2 00
Second, John Becker, Indianapolis	1 00
Half dozen sugar beets, John Becker, Indianapolis	2 00
Second, Aug. Beyer, South Bend	1 00
Half peck red onions, H. A. Smith, Danville	2 00
Second, Aug. Beyer, South Bend	1 00
Half peck yellow onions, Frank Williamson, Zionsville	2 00
Second, Aug. Beyer, South Bend	1 00
Half peck white onions, H. H. Clark, Covington	2 00
Second, Aug. Beyer, South Bend	1 00
Dozen turnip radishes, John Becker, Indianapolis	1 00
Second, John Marvel, Royalton	50
Dozen long radishes, D. Ellwanger & Son, Haughville	1 00
Second, I. N. Shepherd, Terre Haute	50
Display of onions in variety, D. Ellwanger & Son, Haughville	3 00
Second, Frank Williamson, Zionsville	1 00

Committee—John Tilson, Jacob Dill and A. F. Murphy.

BOOK XXXIV—Potatoes.

Peck White Star, A. C. Swift, Glenwood	$2 00
Second, W. H. Hartman, Indianapolis	1 00
Peck Dunmon's Seedling, John Marvel, Royalton	2 00
Second, Sol. Hays, Elizabethtown, Ohio	1 00

Peck Early Rose, A. C. Swift, Glenwood	$2 00
Second, W. H. Hartman, Indianapolis	1 00
Peck Snowflake, W. H. Hartman, Indianapolis	2 00
Second, W. A. Ennis, Clermont	1 00
Peck Early Ohio, W. H. Hartman, Indianapolis	2 00
Second, A. C. Swift, Glenwood	1 00
Peck Shaker Russet, A. C. Swift, Glenwood	2 00
Second, W. H. Hartman, Indianapolis	1 00
Peck Early Vermont, W. H. Hartman, Indianapolis	2 00
Second, John Marvel, Royalton	1 00
Half bushel sweet, John Marvel, Royalton	2 00
Second, D. Ellwanger & Son, Haughville	1 00
Peck early potatoes, any other kind, Ed. O. Whitson, Valley Mills	2 00
Second, W. H. Hartman, Indianapolis	1 00
Peck late potatoes, any other kind, John Marvel, Royalton	2 00
Second, A. C. Swift, Glenwood	1 00
Peck, Beauty of Hebron, Sugar Valley Seed Company, Thorntown	2 00
Second, W. H. Hartman, Indianapolis	1 00
Peck Blue Victor, John Marvel, Royalton	2 00
Second, Sol. Hays, Elizabethtown, Ohio	1 00
Peck Burbank Seedling, W. H. Hartman, Indianapolis	2 00
Second, A. C. Swift, Glenwood	1 00
Collection Irish potatoes, W. H. Hartman, Indianapolis	5 00
Second, A. C. Swift	2 00

Committee—John Tilson, Jacob Dill and A. F. Murphy.

BOOK XXXV—Grain and Seeds.

Half bushel early Dent field corn, in ear, C. H. Marvel, Royalton	$5 00
Second, H. A. Smith, Danville	2 00
Half bushel yellow corn, in ear, H. S. Barlow, Tilden	5 00
Second, Charles Montgomery, Indianapolis	2 00
Half bushel white corn, in ear, G. A. Stanton, Greenwood	5 00
Second, James Riley, Thorntown	2 00
Half bushel corn, any color, G. A. Stanton, Greenwood	5 00
Second, S. S. Whiteside, Franklin	2 00
Half bushel hominy corn, G. F. King, Terre Haute	2 00
Second, H. S. Barlow, Tilden	1 00
Half bushel pop-corn, H. S. Barlow, Tilden	2 00
Second, James Riley, Thorntown	1 00
Display and greatest variety of corn, all kinds, not less than ½ gallon of each variety, John Marvel, Royalton	10 00
Display and greatest variety of wheat, all kinds, not less than ½ gallon of each variety, Sugar Valley Seed Company, Thorntown	10 00
Half bushel white wheat, James Riley, Thorntown	5 00
Second, Whipps Bros., Marion, Ohio	2 00

Half bushel red wheat, W. D. Whipps, Marion, Ohio	$5 00
Second, Sugar Valley Seed Company, Thorntown	2 00
Half bushel spring wheat, Whipps Bros., Marion, Ohio	5 00
Second, Sanford Ennis, Clermont	2 00
Half bushel rye, Sugar Valley Seed Company, Thorntown	2 00
Half bushel oats, Whipps Bros., Marion, Ohio	2 00
Half bushel buckwheat, Whipps Bros., Marion, Ohio	2 00
Half bushel barley, James K. Walker, Harrison, Ohio	2 00
Half bushel flaxseed, Whipps Bros., Marion, Ohio	2 00
Half bushel millet seed, W. A. Ennis, Clermont	2 00
Half bushel timothy seed, Sugar Valley Seed Co., Thorntown	2 00
Half bushel orchard grass seed, W. A. Ennis, Clermont	2 00
Half bushel Hungarian grass seed, Whipps Bros., Marion, Ohio	2 00
Half bushel Kentucky blue grass seed, Sugar Valley Seed Co., Thorntown	2 00
Half bushel English blue grass seed, Sugar Valley Seed Co., Thorntown	2 00
Half bushel redtop grass seed, Whipps Bros., Marion, Ohio	2 00
Half bushel red clover seed, Whipps Bros., Marion, Ohio	2 00
Half bushel English clover seed, Sugar Valley Seed Co., Thorntown	2 00
Sample 10 pounds broom corn, John Marvel, Royalton	2 00
Collection grains and vegetables by any county or local society, Marion County Gardeners' Association, Indianapolis	20 00
Second, Lawrence District Fair Association, Lawrence	10 00

Committee—John Tilson, Jacob Dill and A. F. Murphy.

BOOK XXXVI—Butter, Cheese and Honey.

Five packages creamery butter, not less than 25 pounds each, Arthur Jordan, Indianapolis	$15 00
Second, J. E. Sullivan, Indianapolis	8 00
Three packages dairy butter, not less than 15 pounds each, C. M. Coats & Co., Indianapolis	10 00
Second, Arthur Jordan, Indianapolis	5 00
Five factory cheese, not less than 30 pounds each, C. M. Coats & Co., Indianapolis	15 00
Second, Arthur Jordan, Indianapolis	8 00
Three dairy cheese, not less than 20 pounds each, Walton & Wilcox, Indianapolis	10 00
Second, J. R. Budd & Co., Indianapolis	5 00

Committee—John Tilson, Jacob Dill and A. F. Murphy.

BOOK XXXVII—Honey, Syrup, Sugar, etc.

Comb honey in the most marketable shape, not less than 20 pounds, A. Cox, White Lick	$4 00
Second, Frank Dougherty, Indianapolis	2 00

Extracted honey in the most marketable shape, not less than 20 pounds, A. Cox, White Lick	$4 00
Second, Frank Dougherty, Indianapolis	2 00
Display of honey, the product of one apiary of the present year, A. Cox, White Lick	4 00
Second, Frank Dougherty, Indianapolis	2 00
Display of wax, not less than 10 pounds, J. J. Whitson, Valley Mills	2 00
Second, Frank Dougherty, Indianapolis	1 00
Display of apiarian supplies, Frank Dougherty, Indianapolis	4 00
Comb foundation for use in the brood chamber, Frank Dougherty, Indianapolis	2 00
Comb foundation for surplus honey, Frank Dougherty, Indianapolis	2 00
Honey extracter, Frank Dougherty, Indianapolis	2 00
Second, A. Cox, White Lick	1 00
Wax extracter, Frank Dougherty, Indianapolis	2 00
Section for surplus honey, Frank Dougherty, Indianapolis	2 00
Display of retail packages for extracted honey, Frank Dougherty, Indianapolis	2 00
Second, A. Cox, White Lick	1 00
Honey cake or cakes, Mrs. Frances Cox, White Lick	2 00
Best 2 gallons sorghum syrup, Peter Raab, Indianapolis	4 00
Second, Sanford Ennis, Clermont	2 00
Collection of honey plants, labeled in order, with date of bloom, Mrs. Frances Cox, White Lick	5 00

HORTICULTURAL DEPARTMENT.

L. B. CUSTER, Superintendent.

BOOK XXXIX—Amateur List.

Twenty varieties apples, Mary J. Flick, Lawrence	$12 00
Twelve varieties apples, T. A. Peffer, South Bend	8 00
Six varieties apples, H. A. Smith, Danville	5 00
Plate Maiden Blush apples, T. A. Peffer, South Bend	1 00
Plate Smith's Cider apples, L. C. Trotler, Corydon	1 00
Plate Ben Davis apples, L. C. Trotler, Corydon	1 00
Plate Roman Beauty apples, L. C. Trotler, Corydon	1 00
Plate Winesap apples, A. C. Swift, Glenwood	1 00
Plate Rambo apples, A. C. Swift, Glenwood	1 00
Plate Yellow Bellflower apples, Mary J. Flick, Lawrence	1 00
Plate Fallawater-Tulpehockin apples, L. C. Trotler, Corydon	1 00

Plate Fall Pippin apples, T. A. Peffer, South Bend	$1 00
Plate Clayton apples, Mary J. Flick, Lawrence	1 00
Plate White Pippin apples, A. Vinas, Vine Spring	1 00
Plate Baldwin apples, T. A. Peffer, South Bend	1 00
Plate Northern Spy apples, T. A. Peffer, South Bend	1 00
Plate Vandever Pippin apples, Mary J. Flick, Lawrence	1 00
Plate King of Tompkins County apples, A. Vinas, Vine Spring	1 00
Ten varieties of pears, T. A. Peffer, South Bend	8 00
Five varieties of pears, autumn, T. A. Peffer, South Bend	4 00
Five varieties of grapes, T. A. Peffer, South Bend	5 00
Three varieties of grapes, T. A. Peffer, South Bend	3 00
Five clusters of grapes, any kind, T. A. Peffer, South Bend	2 00
Show of quinces, not less than 12 specimens, N. Hammond, Montour, Mich.	3 00
Display of fruits of all kinds, Mary J. Flick, Lawrence	20 00
Display of fruit by any county or local society	
Second, Cowley County Fair Association, Winfield, Kansas	15 00
Three watermelons, Wm. R. Coulter, Vincennes	5 00
Second, John Reinhart, Brownstown	2 00
Three nutmeg melons, W. O. Rucker, Ben Davis	3 00
Second, J. A. Norwood, Southport	2 00
Largest striped Gypsy melon, J. F. Martin, Winfield, Kansas	2 00
Largest icing melon, W. O. Rucker, Ben Davis	2 00
Collection melons, all kinds, W. O. Rucker, Ben Davis	6 00

Committee—Dennis F. Willey, Charleston; H. C. Marsh, Muncie, and Jacob Minnick, Somerset.

BOOK XL—Professional List.

Twenty varieties of apples, Sol. Hays, Elizabethtown, Ohio	$12 00
Twelve varieties of apples, Sol. Hays, Elizabethtown, Ohio	8 00
Six varieties of apples, Sol. Hays, Elizabethtown, Ohio	5 00
Ten varieties of pears, Sol. Hays, Elizabethtown, Ohio	8 00
Four varieties of autumn pears, Sol. Hays, Elizabethtown, Ohio	5 00
Five varieties of grapes, Munson & Knapp, Grand Rapids, Mich	5 00
Three varieties of grapes, Munson & Knapp, Grand Rapids, Mich	3 00
One variety of grapes, ten clusters, Munson & Knapp, Grand Rapids, Mich	2 00
Collection of quinces, 12 specimens, Sol. Hays, Elizabethtown, Ohio	3 00
Display of fruits, of all kinds, F. N. Benham, Moulost, Mich	20 00
Collection of nursery stock arranged for exhibition adjoining Floral Hall, Albertson & Hobbs, Bridgeport	20 00

Committee—Same as on Book 39.

BOOK XLI—Professional List.

General collection of plants, Bertemann Bros., Indiannpolis	$16 00
Second, Charles Rieman, Indianapolis	8 00
Collection foliage plants, Bertemann Bros, Indianapolis	5 00
Second, Charles Rieman, Indianapolis	3 00
Collection of lycopods and ferns, Bertemann Bros., Indianapolis	5 00
Second, Charles Rieman, Indianapolis	3 00
Display and variety of climbers, Bertemann Bros., Indianapolis	4 00
Second, Charles Rieman, Indianapolis	2 00
Collection begonias, Bertemann Bros., Indianapolis	5 00
Second, Charles Rieman, Indianapolis	3 00
Collection cacti aloes agaves, Bertemann Bros., Indianapolis	6 00
Second, Charles Rieman, Indianapolis	3 00
Collection geraniums, Bertemann Bros., Indianapolis	5 00
Second, Charles Rieman, Indianapolis	3 00
Three rustic stands filled, Bertemann Bros., Indianapolis	5 00
Three hanging baskets filled, Charles Rieman, Indianapolis	4 00
Collection palms, Bertemann Bros., Indianapolis	8 00
Second, Charles Rieman, Indianapolis	4 00
Collection allocasias and calladiums, Charles Rieman, Indianapolis	8 00
Second, Bertemann Bros., Indianapolis	4 00
Collection camas, Bertemann Bros., Indianapolis	5 00
Second, Charles Rieman, Indianapolis	3 00
Arranged Wardian case, Charles Rieman, Indianapolis	4 00
Second, Bertemann Bros., Indianapolis	2 00
Floral display by one individual or firm, Bertemann Bros., Indiadapolis	150 00
Second, Charles Rieman, Indianapolis	100 00
Collection loose cut flowers, Charles Rieman, Indianapolis	8 00
Second, Bertemann Bros., Indianapolis	4 00
Display and arrangement cut roses, Charles Rieman, Indianapolis	4 00
Second, Bertemann Bros., Indianapolis	2 00
Collection basket designs, not less than 5 pieces, Bertemann Bros., Indianapolis	16 00
Second, Charles Rieman, Indianapolis	8 00
Collections bouquets, not less than 5, A. Lloyd, Indianapolis	8 00
Second, Bertemann Bros., Indianapolis	4 00
Newest designs in cut flowers, Charles Rieman, Indianapolis	20 00
Second, Bertemann Bros., Indianapolis	12 00

Committee—James Troop, E. G. Hill and M. W. Arnett.

BOOK XLII—Amateur List.

Collection of plants, Mrs. John P. LePage, North Indianapolis	$10 00
Second, Mary B. Danley, North Indianapolis	5 00
Collection begonias, Mrs. Frank Williamson, Zionsville	6 00

Second, Mrs. John P. LePage, North Indianapolis	$3 00
Collection of cacti, Mrs. Frank Williamson, Zionsville	6 00
Second, Mrs. John P. LePage, North Indianapolis	3 00
Collection of asters, Mary B. Danley, Indianapolis	4 00
Second, Mrs. Frank Williamson, Zionsville	2 00
Collection of cannas, Mrs. Frank Williamson, Zionsville	4 00
Second, Mary B. Danley, Indianapolis	2 00
Collection of climbing or trailing plants, Mary B. Danley, Indianapolis	4 00
Second, Mrs. John P. LePage, North Indianapolis	2 00
Hanging-basket, Mary B. Danley, Indianapolis	2 00
Second, Mrs. John P. LePage, North Indianapolis	1 00
Collection cut flowers, Mary B. Danley, Indianapolis	8 00
Second, Mrs. Dudley Rogers, Greencastle	4 00
Geraniums, cut, Mrs. Dudley Rogers, Greencastle	4 00
Second, Mrs. Frank Williamson, Zionsville	2 00
Roses, cut, Mary B. Danley, Indianapolis	4 00
Verbenas, cut, Mrs. Frank Williamson, Zionsville	4 00
Second, Mary B. Danley, Indianapolis	2 00
Dahlias, cut, Mrs. Frank Williamson, Zionsville	4 00
Second, Mary B. Danley, Indianapolis	2 00

Committee—Same as on Book 41.

BOOK XLIII—Geology and Natural History.

General collection of fossils, G. K. Green, New Albany	$8 00
Second, Fletcher M. Noe, Indianapolis	4 00
Third, Will G. Beach, Indianapolis	2 00
General collection of minerals, Fletcher M. Noe, Indianapolis	8 00
Second, G. K. Green, New Albany	4 00
Third, Will G. Beach, Indianapolis	2 00
Collection Mound Builders (Stone Age) implements, Fletcher M. Noe, Indianapolis	10 00
Second, G. K. Green, New Albany	8 00
Third, Will G. Beach, Indianapolis	Diploma
Collection of stuffed and mounted birds, animals and reptiles, illustrating the natural history of the State, Edward Bouge, Cumberland	15 00
Second, Fletcher M. Noe, Indianapolis	10 00
Collection skinned birds and animals, F. M. Noe, Indianapolis, diploma and	5 00
Collection diurnal Lepidoptera, F. A. Biedenmeister, Indianapolis	4 00
Collection nocturnal Lepidoptera, F. A. Biedenmeister Indianapolis	4 00
Second, Mary F. Fairfield, Indianapolis	2 00
Collection insects, Mary F. Fairfield, Indianapolis	3 00
Collection botanical specimens, Grace Duzan, Indianapolis	5 00
Second, F. A. Biedenmeister, Indianapolis	3 00
Third, Mary Moorehart, Logansport	2 00

Collection American woods, 25 varieties, F. A. Biedenmeister, Indianapolis	$8 00
Second, Mary F. Fairfield, Indianapolis	5 00
Third, Russell D. Robinson, Indianapolis	2 00
Collection coins and medals, Fletcher M. Noe, Indianapolis	5 00
Second, Will G. Beech, Indianapolis	2 00
Collection of curiosities to consist of relics of the late war and of historical interest, Gus Green, New Albany	5 00
Second, Will G. Beach, Indianapolis	3 00

Committee—A. J. Phinney and John Collett, city.

WOMAN'S DEPARTMENT.

Mrs. A. M. Noe, Superintendent.

BOOK XLV—Old Ladies' Department.

Worsted quilt, Mrs. Jane Shull, Vevay	$2 00
Second, Mrs. S. Lee, Indianapolis	1 00
Calico quilt, Mrs. A. M. Kern, Indianapolis	2 00
Second, Mrs. Nancy Jackson, Knightstown	1 00
White quilt, hand sewing, Mrs. M. B. Anderson, Greensburg	2 00
Rug, Mrs. M. Spaldin, Anderson	2 00
Second, Mrs. John Roberts, Brookville	1 00
Spread, knit, Mrs. Jane Shull, Vevay	2 00
Second, Mrs. M. Spaldin, Anderson	1 00
Spread, crochet, Mrs. Jane Shull, Vevay	2 00
Pair silk mittens, hand knit, Mrs. M. B. Anderson, Greensburg	2 00
Second, Mrs. E. Hughes, Indianapolis	1 00
Pair silk stockings, hand knit, Mrs. C. Morrison, Indianapolis	2 00
Second, Mrs. S. Lee, Indianapolis	1 00
Pair silk socks, hand knit, Mrs. E. Hughes, Indianapolis	2 00
Second, Mrs. C. Morrison, Indianapolis	1 00
Pair woolen stockings or socks, hand knit, Mrs. M. B. Anderson, Greensburg	1 00
Pair cotton stockings or socks, hand knit, Mrs. Morner, Shelbyville	1 00
Hem-stitching, Mrs. Mary Matthews, Arlington	2 00
Second, Mrs. Morner, Shelbyville	1 00
Drawn work, Mrs. Morner, Shelbyville	2 00
Second, Mrs. M. Spaldin, Anderson	1 00
Pair worsted mittens, fancy knitting, Mrs. H. R. Giesy, Columbus	1 00
Table cover, Mrs. E. A. Foulke, Paris, Ill	2 00
Second, Mrs. Jane Shull, Vevay	1 00

Lace display, hand made, Mrs. H. R. Giesy, Columbus	$2 00
Second, Mrs. Rittenhouse, Indianapolis	1 00
Embroidery display, Mrs. Mary Sanders, Shelbyville	2 00
Second, Mrs. E. J. Kemper, Muncie	1 00
Embroidery, silk specimen, Mrs. E. A. Foulke, Paris, Ill	2 00
Second, Mrs. John Roberts, Brookville	1 00
Embroidery, worsted specimen, Mrs. Dorcas Barley, Marion	2 00
Second, Mrs. Morner, Shelbyville	1 00
Collection of household relics, Mrs. O. A. Flanner, Indianapolis	3 00
Second, Mrs. E. N. Blair, Indianapolis	2 00

Committee—Mrs. E. S. Swift, city; Mrs. E. E. Smith, Lafayette, and Miss Kate Heron, Connersville.

BOOK XLVI—Knitting and Crochet Work.

Infant's knit or crotchet shirt, Mrs. Miur, Indianapolis	$1 00
Infant's knit or crotchet socks, Mrs. J. H. Mathews, Indianapolis	1 00
Pair silk mittens, hand knit, Mrs. P. D. Stagg, Greensburg	2 00
Second, Mrs. N. G. Kellogg, Lebanon	1 00
Pair silk stockings, hand knit, Mrs. A. G. Jackson, Vevay	3 00
Second, Mrs. M. M. Finch, Indianapolis	2 00
Knit or crochet hood, Mrs. R. H. Homer, Knightstown	1 00
Thread or silk crochet baby caps, Mrs. E. B. Kirk, Shelbyville	2 00
Second, Mrs. Sophia Groves, Anderson	1 00
Knit or crochet fascinator, Miss Jennie Swift, Connersville	2 00
Second, Mrs. A. Sammons, Indianapolis	1 00
Crochet child's sacque, Mrs. E. B. Kirk, Shelbyville	2 00
Second, Mrs. M. Posz, Shelbyville	1 00
Crochet cotton tidy, Mrs. H. S. Tanner, Paris, Ill	1 00
Afghan, Mrs. E. W. Mathews, Indianapolis	2 00
Second, Mrs. Sophia Groves, Anderson	1 00
Afghan, infant's, Mrs. P. D. Stagg, Greensburg	2 00
Second, Mrs. A. J. Jackson, Vevay	1 00
Display crochet buttons, Mrs. M. F. Owen, Indianapolis	2 00
Crochet lace, display not less than 1 yard, Miss Kate Foust, Indianapolis,	2 00
Knit lace, display not less than 1 yard, Mrs. P. D. Stagg, Greensburg	2 00

Committee—Mrs. P. E. Tyner, Greenfield; Mrs. Cora C. Fisher, Crawfordsville, and Mrs. Mollie Bundy, New Castle.

BOOK XLVII—Lace Work.

Point lace display, Miss Mamie Babbitt, Knightstown	$3 00
Second, Mrs. S. Beardsley, Indianapolis	2 00
Point lace, specimen, Mrs. M. Posz, Shelbyville	3 00
Second, Mrs. Hatttie Hopkins, Columbus	2 00

Guipure lace, specimen, Mrs. E. M. Rittenhouse, Indianapolis	$3 00
Darning on net, specimen, Miss Retta Mathews, Arlington	2 00
Second, Mrs. A. G. Jackson, Vevay	1 00
Applique lace, specimen, Mrs. M. Posz, Shelbyville	2 00
Second, Mrs. H. Hopkins, Columbus	1 00
Tatting display, Mrs. W. P. Diggs, St. Louis, Mo.	2 00
Breton lace display, Mrs. E. M. Rittenhouse, Indianapolis	2 00
Macrame lace display, Miss Susie E. Martin, Indianapolis	1 00
Feather edge, specimen, Mrs. R. H. Homer, Knightstown	2 00
Second, Miss Mamie Ehrenhardt, Terre Haute	1 00
Rick-rack display, Mrs. Sophia Groves, Anderson	2 00
Second, Mrs. Annie M. Bruner, Indianapolis	1 00

Committee—Same as on Book 46.

BOOK XLVIII—Embroidery.

Embroidery, linen floss, Mrs. E. A. Foulke, Paris, Ill	$2 00
Embroidery, cotton display, Miss DeSouchet, Indianapolis	2 00
Embroidery, silk, child's dress, Mrs. Sophia Groves, Anderson	2 00
Embroidery, napkin set, Mrs. J. Cambern, Rushville	2 00
Embroidery, bed set, Mrs. J. Cambern, Rushville	2 00
Embroidery, handkerchief, Mrs. A. G. Jackson, Vevay	1 00
Embroidery, silk specimen, Miss Kate Sims, Columbus	2 00
Second, Mrs. Eva Kirtland, New Albany	1 00
Embroidery, silk skirt, Miss Mamie Babbitt, Knightstown	2 00
Embroidery, silk, infant's shawl, Mrs. M. Posz, Shelbyville	2 00
Second, Mrs. P. D. Stagg, Greensburg	1 00
Embroidery, table cover, Mrs. A. D. Pendleton, Indianapolis	3 00
Second, Mertie Seeley, Indianapolis	2 00
Embroidery, ottoman cover, Mrs. A. B. Bosserman, Lafayette	2 00
Embroidery, chair cover, Mrs. Jacob Fox, Indianapolis	2 00
Embroidery, sofa cushion, Mrs. S. T. Casterline, Indianapolis	2 00
Second, Mrs. A. G. Jackson, Vevay	1 00
Embroidery, toilet cushion, Mrs. F. E. Shidler, Muncie	2 00
Second, Mrs. A. G. Selman, Indianapolis	1 00
Embroidery, slippers, made up, Miss Jennie Swift, Connersville	2 00
Embroidery, applique, white, specimen, Mrs. M. Posz, Shelbyville	1 00
Embroidery, applique, colored, specimen, Mrs. M. Posz, Shelbyville	2 00
Second, Mrs. P. D. Stagg, Greensburg	1 00
Embroidery, outline display, Mrs. A. Sammons, Indianapolis	2 00
Embroidery, Kensington specimen, Mrs. F. E. Shidler, Muncie	3 00
Second, Miss Jennie Swift, Connersville	2 00
Embroidery, tapestry display, Mrs. A. B. Bosserman, Lafayette	2 00
Emproidery, art in colors, display, Mrs. A. M. Robertson, Indianapolis	3 00
Second, Mrs. F. E. Shidler, Muncie	2 00
Embroidery, chenille display, Mrs. P. D. Stagg, Greensburg	3 00
Second, Miss Kate Sims, Columbus	2 00

Embroidery, arasene specimen, Miss Minnie A. Coffin, Indianapolis	$3 00
Second, Miss Mary B. Keen, Indianapolis	2 00
Embroidery, high art needle-work specimen, Miss Minnie A. Coffin, Indianapolis	2 00
Second, Tillie Allen, Indianapolis	1 00
Embroidery, ribbon specimen, Anna Geis, Indianapolis	3 00
Second, Mrs. S. T. Casterline, Indianapolis	2 00
Embroidery, fire-screen, mounted, Mrs. A. B. Gates, Indianapolis	3 00
Second, Mrs. A. Sammons, Indianapolis	2 00

Committee—Mrs. J. W. Shideler, city; Mrs. M. S. Phinney, Muncie, and Miss Lula A. Davidson, Whitesville.

BOOK XLIX—Sewing—Machine and Hand.

Machine work, three articles, Miss Fannie Cummings, Indianapolis	$2 00
Second, Mrs. M. Posz, Shelbyville	1 00
Quilt, silk, needle-work, Effie Pence, Terre Haute	3 00
Second, Mrs. Arta Dunning, Marion	2 00
Crazy quilt, Mrs. A. Sammons, Indianapolis	2 00
Second, Miss Maggie Miller, Indianapolis	1 00
Button holes, displayed on different materials, Mrs. M. N. Sala, Indianapolis	2 00
Second, Mrs. Sarah Hodson, Anderson	1 00
Hemstitching, specimens, hand, Mrs. P. D. Stagg, Greensburg	2 00
Drawn work, Mrs. J. W. Beck, Indianapolis	2 00
Second, Mrs. J. W. Beck, Indianapolis	1 00
Infant's wardrobe, most suitable and neat, Mrs. J. R. Scott, Indianapolis	3 00
Pillow shams, Mrs. E. W. Matthews, Indianapolis	2 00
Second, Mrs. M. Posz, Shelbyville	1 00
Braiding display, Mrs. A. G. Jackson, Vevay	1 00

Committee—Same as on Book 48.

BOOK L—Miscellaneous.

Wax flowers, Laura E. Wellman, Indianapolis	$2 00
Second, Susie E. Martin, Indianapolis	1 00
Wax fruit, Susie E. Martin, Indianapolis	2 00
Second, Susie E. Martin, Indianapolis	1 00
Wax work, ornamental, Susie E. Martin, Indianapolis	2 00
Second, Susie E. Martin, Indianapolis	1 00
Handkerchief satchet, Mrs A. P. Hunt, Laporte	1 00
Glove box, Miss Mary R. Heron, Indianapolis	1 00
Broom-holder, Miss Jennie Swift, Connersville	2 00
Second, Mrs. F. E. Shidler, Muncie	1 00
Skeleton leaves and ferns, Miss Lloyd, Indianapolis	2 00
Feather work on cloth, Mrs. A. Condit, Muncie	1 00

Toilet cushion, not embroirdered, Mrs. L. H. Robinson, Crawfordsville	$2 00
Second, Mrs. E. B. Kirk, Shelbyville	1 00
Sofa pillow, not embroidered, Mrs. E. W. Matthews, Indianapolis	2 00
Second, Mrs. M. Posz, Shelbyville	1 00
Lamp mats, fancy, Mrs. S. Beardsley, Indianapolis	1 00
Toilet mats, Mrs. Grove, Anderson	1 00
Infant's nursery basket, Mrs. J. R. Scott, Indianapolis	2 00
Chair strips, Mrs. A. Sammons, Indianapolis	2 00
Lambrequins, window or mantle, Mrs. Mollie Cain, Brookville	2 00
Tida, not crochet, Mrs. M. Posz, Shelbyville	2 00
Second, Mrs. Mary B. Keen, Indianapolis	1 00
Minerals, collection named, Alice E. Fairfield, Indianapolis	3 00
Butterflies, collection named, Mary Fairfield, Indianapolis	3 00
Stuffed and mounted birds, collection named, Laura Ingersoll, Indianapolis.	7 00
Second, Mrs. Wainscott, Cumberland	3 00
Upholstery work, chair, Mrs. A. M. Noe, Indianapolis	3 00
Exhibit in silk culture, Mrs. E. E. Fay, Princeton	3 00
Second, Mesdames Boyd and Whittaker, Indianapolis	2 00
Ten yards rag carpet, Mrs. S. Grove, Anderson	2 00
Rug, Mrs. S. Grove, Anderson	2 00
Second, Mrs. H. R. Gillette, Indianapolis	1 00
Fur rugs, Mrs. A. M. Noe, Indianapolis	3 00

Committee—Mrs. M. B. Thrasher, Shelbyville; Mrs. M. F. Lindsey, Kokomo, and Mrs. Dr. Shoptaugh, Princeton.

BOOK LI—Business Exhibit.

Display millinery, Mrs. McKiernan, Indianapolis	$20 00
Second, Mrs. Dietrich, Indianapolis	15 00
Display dressmaking, Mrs. M. J. Fitch, Indianapolis	20 00
Second, Mrs. C. F. Farnsworth	15 00
Display hair goods, Miss M. E. Phelan	5 00
Stamping, embroidery and fancy goods	
Second, Mrs. J. Cambern, Rushville	8 00
Paper box, Miss Flora Sutler, Indianapolis	5 00
Job printing, second, Mrs. S. J. Diamond, Indianapolis	5 00
Kindergarten work, Mrs. E. A. Blaker, Indianapolis	Diploma
Specimen bookkeeping, Minnie Bacon, Indianapolis	5 00
Laundried shirts, collar and cuffs, Mrs. Margaret Short, Anderson	2 00

Committee—Same as on Book 45.

BOOK LII—Decorative Art Work.

Repousse work, display, Mrs. H. C. Roney, Indianapolis	$2 00
Second, Miss Minnie Gates, Indianapolis	1 00
French decorative work, display, Miss A. M. Gill, Indianapolis	1 00
Alto relievo work in clay, display, Miss Sue M. Ketcham, Indianapolis	2 00
Etching on cloth, display, Miss Mary Landers, Indianapolis	1 00

Modeling in clay, display, Miss Retta Mathews, Arlington	$3 00
Second, Miss Sue M. Ketcham, Indianapolis	2 00
Pottery painting, Limoges, display, Mrs. Sallie D. Vajen, Indianapolis	3 00
Second, Miss Sue M. Ketcham, Indianapolis	2 00
Pottery painting, Limoges, specimen, Mrs. Sallie D. Vajen, Indianapolis	2 00
Pottery painting, Bisque, display, Miss Sue M. Ketcham, Indianapolis	3 00
Pottery painting, Bisque, specimen, Miss Sue M. Ketcham, Indianapolis	2 00
Painting on china, display, Mrs. John F. Julian, Indianapolis	5 00
Second, Mrs. Anna R. Coffin, Indianapolis	3 00
Painting on china, specimen, Mrs. Anna R. Coffin, Indianapolis	2 00
Painting on tiles, display, Miss Sue M. Ketcham, Indianapolis	3 00
Second, Miss Nellie Berkey, Lafayette	2 00
Painting on slates, display, Mrs. Anna R. Coffin, Indianapolis	3 00
Second, Caroline Henry, Indianapolis	2 00
Painting on wood, display, Miss Mary Robinson, Indianapolis	5 00
Second, Mrs. Annie R. Coffin, Indianapolis	3 00
Painting on wood, specimen, Mrs. Annie R. Coffin, Indianapolis	2 00
Painting on silk or satin, display, Mrs. S. E. Leet, Indianapolis	5 00
Second, Mrs. T. J. Trusler, Indianapolis	3 00
Painting on silk or satin, specimen, Mrs. Jno. F. Julian, Indianapolis	2 00
Painting on colored velvet display, Mrs. Jno. F. Julian, Indianapolis	3 00
Painting on colored velvet, specimen, Miss Nellie Rodman, Indianapolis,	2 00
Painting on white velvet, specimen, Miss Mary R. Heron, Indianapolis	3 00
Second, Mrs. T. J. Trusler, Indianapolis	2 00
Painting on velvet, Kensington display, Miss Sue M. Ketchem, Indianapolis,	2 00
Second, Mrs. Stagg, Greensburg	1 00
Painting fan, Miss Mary R. Heron, Indianapolis	2 00
Painting toilet set, Mrs. T. J. Trusler, Indianapolis	2 00
Second, Miss Jennie Swift, Connersville	1 00
Painting fancy cards, display, Miss Mary Robinson, Indianapolis	2 00
Second, Mrs. Chas. Railsback, Indianapolis	1 00
Painting fire screen, mounted, Miss Retta Mathews, Arlington	3 00
Second, Mrs. Annie R. Coffin, Indianapolis	2 00
Original design for decoration in oil, Mrs. C. B. Ingraham, Indianapolis	3 00
Second, Mrs. Annie R. Coffin, Indianapolis	2 00
Original design for decoration in water colors, Miss Mary Robinson, Indianapolis	3 00
Second, Miss Retta Mathews, Arlington	2 00
Drawings, original, display, Miss Mary Robinson, Indianapolis	3 00
Drawings, copy, display, Miss Minnie Coffin, Indianapolis	2 00
Painting on pair panels, water colors, Miss Mary Robinson, Indianapolis,	3 00
Second, Mrs. S. E. Leet, Indianapolis	2 00
Painting on pair panels, oil, Mrs. Annie R. Coffin, Indianapolis	3 00
Second, Miss Retta Mathews, Arlington	2 00

Committee—Mrs. Lizzie C. Earl, Connersville; Mrs. C. F. Mount, city, and Prof. Joseph Tingley, Marion.

BOOK LIII—Art Work—Amateur.

Crayon drawings, display, Mrs. T. J. Trusler, Indianapolis	$3 00
Pastelle paintings, display, Miss Mary R. Heron, Indianapolis	3 00
Painted plaques, display, Mrs. Charles Railsback, Indianapolis	3 00
Second, Dollie C. Scharff, Indianapolis	2 00
Flower painting in oil, display, Cora B. Campbell, Danville	3 00
Second, Mary Robinson, Indianapolis	2 00
Flower painting, water colors, display, Mary Robinson, Indianapolis	3 00
Fruit painting in oil, display, Mrs. James E. Roberts, Connersville	3 00
Second, M. E. Emerson, Clayton	2 00
Landscapes in oil, display, Miss Mary Landers, Indianapolis	6 00
Second, Mrs. T. J. Trusler, Indianapolis	3 00
Landscapes in oil, specimen, Mrs. H. S. Tucker, Indianapolis	3 00
Portraits in oil, specimen, Mrs. H. S. Tucker, Indianapolis	5 00
Second, Mrs. T. J. Trusler, Indianapolis	3 00
Sketch from nature, in oil, Miss Mary Landers, Indianapolis	4 00
Second, Miss Mary Robinson, Indianapolis	2 00

Committee—Miss Emma Fadely, Mier; Mrs. E. S. Swift, city, and Miss Kate Heron, Connersville.

BOOK LIV—Art Work—Professional.

Portraits in oil, display, Miss Retta Mathews, Arlington	$10 00
Second, Mrs. C. B. Ingraham, Indianapolis	5 00
Portraits in oil, specimen, Mrs. Julia Ludington, Indianapolis	3 00
Landscapes in oil, display, Miss Sue M. Ketcham, Indianapolis	7 00
Second, Mrs. J. F. Julian, Indianapolis	3 00
Landscapes in oil, sketch from nature, Miss Sue M. Ketcham, Indianapolis	3 00
Fruit or vegetables, painting in oil, display, Miss Sue M. Ketcham, Indianapolis	8 00
Second, Miss Retta Mathews, Arlington	4 00
Fruit or vegetables, painting in oil, specimen from nature, Miss Sue M. Ketcham, Indianapolis	3 00
Flower painting in oil, display, Miss Retta Matthews, Arlington	5 00
Second, Mrs. Annie Coffin, Indianapolis	3 00
Flower painting in oil, specimen from nature, Mrs. Annie Coffin, Ind'polis.	2 00
Flower painting, water colors, display, Miss Sue M. Ketcham, Ind'polis	5 00
Second, Miss Retta Matthews, Arlington	3 00
Flower painting, water colors, specimen, Miss Sue M. Ketcham, Ind'polis	2 00
Study from life, in oil, Miss Retta Matthews, Arlington	5 00
Second, Mrs. H. S. Tucker, Indianapolis	3 00
Study from life, water colors, Miss Mary Landers, Indianapolis	5 00
Drawing from life, Mrs. Annie Coffin, Indianapolis	2 00
Pastelle painting, specimen, St. John's Academy, Indianapolis	3 00

Plaques, display, Miss Retta Matthews, Arlington	$3 00
Second, Mrs. Annie Coffin, Indianapolis	2 00
Plaques, alabaster, Mrs. J. F. Julian, Indianapolis	2 00
Crayon drawing, specimen, Miss Retta Matthews, Arlington	3 00
Second, Mrs. C. B. Ingraham, Indianapolis	2 00
Drawings from antique, specimen, Miss Retta Matthews, Arlington	2 00

Committee—Same as on Book 52.

BOOK LV—Table Luxuries.

Butter, 5 lbs., Mrs. Geo. W. Johnston, Aurora	$3 00
Second, Mrs. Harriet Stanton, Greenwood	2 00
Honey, in comb, 5 lbs., in most marketable shape, Mrs. Frances Cox, White Lick	3 00
Second, Mrs. Louisa C. Brown, Indianapolis	2 00
Honey, extracted, 5 lbs., in most marketable shape, Mrs. Frances Cox, White Lick	3 00
Second, Miss Alma Hammond, Travers City, Mich	2 00
Bread, loaf, wheat, yeast, Mrs. Stella Moore, Indianapolis	2 00
Second, Miss Mary Hedrick, Indianapolis	1 00
Bread, wheat, salt-rising, Miss Mary Hedrick, Indianapolis	2 00
Second, Mrs. Ware, Indianapolis	1 00
Graham bread, yeast, Miss Mary Hedrick, Indianapolis	2 00
Second, Roxy Swift, Glenwood	1 00
Graham bread, salt-rising, Mrs. N. A. Ford, Indianapolis	2 00
Second, Miss Mary Hedrick, Indianapolis	1 00
Fig cake, Mrs. G. W. McCurdy, Indianapolis	2 00
Layer cake, jelly, Mrs. M. E. Crist, Crawfordsville	1 00
Layer cake, cocoanut, Mrs. S. Grove, Anderson	1 00
Pound cake, Mrs. Darling, North Indianapolis	2 00
Second, Mrs. Geo. Prier, Indianapolis	1 00
Fruit cake, Mrs. S. W. Moulton, Shelbyville	3 00
Second, Mrs. Annie M. Bruner, Indianapolis	2 00
Pork cake, Mrs. S. Grove, Anderson	2 00
Chocolate cake, layer, Miss Mary L. Fox, Indianapolis	3 00
Chocolate cake, loaf, Miss Mary L. Fox, Indianapolis	2 00
Crullers, Mrs. Brandenburg, Indianapolis	1 00
Jellies, collection, Mrs. E. Speer, Greensburg	3 00
Second, Mrs. N. E. Woods, Pecksburg	2 00
Preserves, collection, not less than one pint each, Mrs. E. Speer, Greensburg	5 00
Second, Mrs. M. E. Crist, Crawfordsville	3 00
Fruit butter, collection, not less than one pint each, Mrs. Mary Morehart, Logansport	3 00
Second, Mrs. E. Speer, Greensburg	2 00
Pickles, mixed, Mrs. M. E. Stowell, Indianapolis	1 00
Pickles, cucumber, Mrs. Frank Towne, Indianapolis	1 00

Canned fruit, collection, not less than one pint each, Mrs. Johnson, Castleton	$5 00
Second, Mrs. Sadie J. Hall, Indianapolis	3 00
Maple molasses, half gallon, Annie B. Marvel, Royalton	1 00
Maple sugar, five pounds, Mrs. Mary Morehart, Logansport	1 00
Tomato catsup, not less than one pint, Miss Mary Hedrick, Indianapolis	1 00

Committee—Mrs. Louise Hawkins, city; Mrs. M. D. Fitch, Laporte, and Mrs. Schultz, Attica.

BOOK LVI—Agricultural, Etc.

Largest display and variety of grains, Annie B. Marvel, Royalton	$5 00
Second, Mrs. Mary Danley, Indianapolis	3 00
Largest display and variety of vegetables, Mrs. M. J. Flick, Lawrence	5 00
Second, Annie B. Marvel, Royalton	3 00
Largest display and variety of fruits, Mrs. M. J. Flick, Lawrence	5 00
Second, Annie B. Marvel, Royalton	3 00

Committee—Same as Book 55.

BOOK LVII—Children's Department.

Loaf wheat bread—yeast, Ollie Irvin, Indianapolis	$2 00
Second, Nellie Price, Indianapolis	1 00
Loaf wheat bread—salt-rising, Hattie Fox, Indianapolis	2 00
Second, Ollie Irvin, Indianapolis	1 00
Pound cake, Gertie Darling, North Indianapolis	2 00
Second, Ollie Irvin, Indianapolis	1 00
Fancy cake, Edith Beck, Indianapolis	2 00
Second, Nina Bond, Indianapolis	1 00
Jellies, collection, L. Sammons, Indianapolis	2 00
Second, Edith Beck, Indianapolis	1 00
Pickles, mixed, L. Sammons, Indianapolis	1 00
Preserves, collection not less than one pint each, Etta Fritsche, Indianapolis	2 00
Patch work, plain, Hattie Chandlee, Indianapolis	1 00
Patch work, fancy, Mary Fry, Indianapolis	1 00
Hand-sewing, garment, Anna Gray, Shelbyville	1 00
Darning on old garment, Maggie Morgan, Terre Haute	1 00
Button-holes, display, different materials, Mertie Walters, Indianapolis	2 00
Second, Mollie Ford, Indianapolis	1 00
Embroidery, cotton, Josie Jackson, Vevay	2 00
Second, Gertrude P. Muchmore, Shelbyville.	1 00
Embroidery, darning on net, Gertrude P. Muchmore, Shelbyville	1 00
Embroidery, worsted specimen, Hattie Coats, Indianapolis	2 00
Second, Gertrude P. Muchmore, Shelbyville.	1 00
Embroidery, silk specimen, Anna Gray, Shelbyville	2 00
Second, Minnie Prier, Indianapolis	1 00

Crochet work, display, Josie Jackson, Vevay	$2 00
Second, Nellie Howe, Princeton	1 00
Pair knit stockings, Josie Jackson, Vevay	1 00
Pair knit mittens, Nellie Contant, Crawfordsville	1 00
Knit lace, display not less than 1 yard each, Gertrude P. Muchmore, Shelbyville	1 00
Tidy, Anna Gray, Shelbyville	2 00
Second, Nellie Contant, Crawfordsville	1 00
Pincushion, Nellie Howe, Princeton	1 00
Toilet set, Anna Gray, Shelbyville	2 00
Second, L. Sammons, Indianapolis	1 00
Painting on wood, display, M. E. Ingraham, Indianapolis	2 00
Second, Manon Buck, Laporte	1 00
Painted plaques, display, Ines Buck, Laporte	2 00
Second, Alice Graydon, Indianapolis	1 00
Painting on tiles, display, Dollie Oberly, Indianapolis	2 00
Drawing, original, Mary E. Ingraham, Indianapolis	2 00
Second, Alice Graydon, Indianapolis	1 00
Drawing, copy, Manon Buck, Laporte	1 00
Fret sawing, display, E. & O. Whitson, Valley Mills	2 00
Second, Willie Brandenburg, Indianapolis	1 00
Woods, collection named, Fred. Biedenmeister, Indianapolis	2 00
Shells, collection named, Otto L. Dickson, Indianapolis	1 00
Minerals, collection named, Frank Hutchins, Indianapolis	2 00
Butterflies, collection named, Arnold Riegger, Indianapolis	3 00
Second, Fred. Biedenmeister, Indianapolis	2 00
Insects, collection named, Fred. Biedenmeister, Indianapolis	2 00
Moths, collection named, Fred. Biedenmeister, Indianapolis	3 00
Second, Arnold Riegger, Indianapolis	2 00
Collection of stamps, Clarence E. Coffin, Indianapolis	1 00
Collection of curiosities, Otto L. Dickson, Indianapolis	1 00

Committee—Mrs. M. F. Lindsey, Kokomo; Mrs. M. B. Trasher, Shelbyville, and Mrs. J. E. Cobb, city.

DOG SHOW.

CLARENCE M. FOSTER, Superintendent.

St. Bernards, owned by W. H. Hart, Indianapolis	$5 00
Collies, owned by Louis Haag, Indianapolis	5 00
English mastiff, owned by Geo. E. Townley, Indianapolis	3 00
Second, Geo. Jackson, Beech Grove, Marion County	2 00
Skye terriers, owned by Annie D. Lewis, Indianapolis	3 00
English setters, dogs, owned by S. H. Socwell, Indianapolis	5 00
Second, Joseph Becker, Indianapolis	3 00
English setters, bitches, owned by S. H. Socwell, Indianapolis	3 00
Second, Bert Adams, Indianapolis	2 00
English setters, puppies, owned by B. F. Jones, Indianapolis	3 00
Second, E. G. Clark, Indianapolis	2 00
Gordon setters, puppies, owned by H. Schwinge, Indianapolis	3 00
Irish setters, dogs, owned by H. A. Comstock, Indianapolis	5 00
Second, B. F. Rider, Crothersville	3 00
Irish setters, bitches, owned by H. Rider, Crothersville	3 00
Second, Ed. Wood, Indianapolis	2 00
Irish setters, puppies, owned by J. M. Freeman, Bicknell	3 00
Second, John E. Bradshaw, Indianapolis	2 00
Pointers, dogs, owned by H. W. Craft, Indianapolis	5 00
Second, W. H. Porter, Indianapolis	3 00
Pointers, bitches, owned by Arthur Edmunds, Indianapolis	3 00
Second, C. H. Miller, Indianapolis	2 00
Pointers, puppies, owned by S. H. Collins, Indianapolis	3 00
Second, M. F. Keller, Indianapolis	2 00
Bitches and puppies owned by H. Rider, Crothersville	3 00
Second, Jesse Hough, Indianapolis	2 00
Grey hounds and deer hounds, owned by Van Laurence, Indianapolis	3 00
Miscellaneous (dogs of pure breed, not provided for in above classes), first owned by Mary Beal, Indianapolis	5 00
Second, Harry Woolen, Indianapolis	3 00

SPECIAL PRIZES,

Offered by Business Men of Indianapolis.

By Horace A. Comstock, for the best Irish setter bitch, H. Rider, Crothersville, a silver cup.

By Vajen & New, for the best pointer bitch, A. Edmunds, Indianapolis, a nickel-plated dog collar and lock.

By Ad. Hereth, for the best English setter dog, S. H. Socwell, Indianapolis, a fine dog collar.

By Kelleher, the Hatter, for the best Irish setter dog, H. Comstock, Indianapolis, a fine silk hat.

By W. M. Haag, for the best bitch and litter of not less than six puppies under six months of age, H. Rider, Crothersville, a plush perfume case.

By the Arcade Clothing Store, for best Gordon setter, H. Schwinge, Indianapolis, a hunting shirt.

By the Model Clothing Store, for the largest Newfoundland owned and entered by a resident of Marion County, C. Hough, Indianapolis, a fine pair pants.

By Geo. J. Marott, for the best English setter bitch, S. H. Socwell, Indianapolis, a fine pair rubber boots.

By Chas. Mayer & Co., for the best water spaniel, Harry Woolen, a handsome collar.

By S. Beck & Son, for the best pointer dog, H. W. Craft, Indianapolis, one thousand paper shells.

By L. W. Mack, for the best collie dog or bitch, Louis Haag, Indianapolis, a pair velvet embroidered slippers.

By Hansen, VanCamp & Co., for the best English setter puppy, B. F. Jones, Indianapolis, twenty-five pounds Dead-shot powder.

By Craft & Co., for the best Irish setter puppy, J. M. Freeman, Bicknell, a pair of gold sleeve buttons.

SPECIAL MERITS

—OF—

EXHIBITS IN BOOK A, STATE FAIR 1885.

Examined by

ISAAC G. TOMLINSON.

The "Eagle Machine Works," Indianapolis, Ind., exhibited one of their Double C, Pony Saw-Mills, traction paper pulleys, both backward and forward. Used Bennett & Miller's Patent Duplex Mill-Dog, made for sawing quartered oak. This mill also used Miner's Head Block, which is worthy of especial note. It is very simple in construction, no springs, is set to any thickness with the greatest accuracy, worked by a lever in an arch with a scale, has screw feed and long brass nut setting the knees forward, together or separate; also can be set to cut tapering, thirty-six-inch throw between knee and saw. The knees, together or separate, can be run forward or backward rapidly by a crank; in setting the log or gigging the carriage the sawyer need not change his position. It is simultaneous and independent. It is claimed for this mill, under favorable conditions, a capacity of 30,000 feet of lumber per day.

The Vinton Iron Works, Indianapolis, Ind., exhibited a saw-mill called their "New E." This mill uses the paper friction feed. The paper pulley on the cone shaft is 4 inches in diameter by 5 inches face, and the idler is also paper. The mandrel runs in an adjustable pivot-box 7 inches long, lined with the best babbitt, and being self-adjusting they can never bind or heat. Three change cones vary the feed from ⅜ to 2 inches; the backing-speed is 5 inches. It has a saw-guide with which the sawyer gives the saw the necessary lead without a wrench, and without getting nearer than 12 inches of the saw. The head-block is a rack and pinion block, opening 36 inches. The teeth on the ratchet wheel of the set-rig are machine-cut, making the set very accurate. The throw is $\frac{1}{16}$ to 2¼ inches. The sawyer can stand either at the end of the mill or in front of the carriage, and from either position can both saw and set. The carriage will saw 18 feet. This company manufactures six sizes of mills and claims capacities ranging from 2,000 to 75,000 feet per day. These mills are strong and steady runners, and cast much credit on the enterprise and advanced spirit of this manufacturing company.

The Car Manufacturing Company, of Harrisburg, Pa., exhibited two of their double saw mills, one class "A," the other class "B." Class "A" has a longitudinal carriage timber, with standards attached, and especially adapted to board sawing. Class "B," "Favorite Mill," is especially intended for sawing bill lumber. The woodwork in husk carriage is of heavy Georgia yellow-pine. The saw mandrels are all made of steel, extra heavy keyseated for driving pulley; turned all over; the collars and pins for saw turned with great accuracy; mandrel boxes babbitted with genuine babbitt metal; large oil and sponge chambers. The saddle, with set screws for adjusting and supporting boxes, is seated on a cast-iron shoe; oblong holes in base will allow the saddle to swivel on the shoes when the saw is adjusted for a more or less lead. The friction feed is operated by one lever, either forward or backward, and is so arranged that it will remain in any position. These mills use a very ingenious head-block. The knee or standard is not put together with bolts, but has rack cast on solid and planed out to fit neatly on head-block proper. On one side of standard is a board-dog, always in position and ready for use. To each standard is attached the "parallel bar attachment," dispensing with blocks of wood used for liners. This parallel bar can be advanced instantly four inches, remaining fixed at any point from zero to four inches. A set lever is attached to the main lever, enabling the sawyer to control both movements of the set-gear without stepping away from the feed lever.

L. W. Forbes & Bro., Knightstown, Ind., exhibited a saw-mill and indicator attachment. The committee failed to find the owner of these articles, and can but make a general notice of their points of merit. It is no more than just to say that this saw-mill and indicator are a fair success for the purposes intended.

HORSE POWER.

The Eagle Machine Works, Indianapolis, Ind., exhibited a ten-horse power; a right or left, fast or slow speed without change of gearing; double-action friction break, instantaneous; uses two tumbling rod shafts; master wheel, without arms or center pivot, resting on four travelers, thus lessening friction to a minimum; levers light, and set at an acute angle, insuring maximum strength.

H. T. Conde, Indianapolis, Ind., exhibited a one-horse power. This little piece of mechanism embraces so many noteworthy points in its construction, and is so easily adjusted and applied to the various uses demanding a one-horse motor, that a minute and detailed description would seem superfluous.

The Marseilles Manufacturing Company, of Marseilles, Ill., had on exhibition a ten-horse power. This machine strikes the intelligent observer as being decidedly strong and of great durability. It is decidedly modern, and ranks among the foremost machines of that class. Its bearings tend in the direction of rendering friction a minimum.

The Whiteman Agricultural Company, of St. Louis, Mo., exhibited a ten-horse power. This machine embraces a combination of many good, and some superior points. Its parts and bearings are symmetrical, and roll on in a beautiful harmony of design, casting much credit on the enterprise of its designer and maker.

TRACTION ENGINES.

The Eagle Machine Works, Indianapolis, Ind., exhibited one of their traction engines. This engine is well made, very light, and yet bears the marks of being substantial and well adapted to do that for which it was made. The engine is mounted high on the boiler, thus placing the hand wheel above the front wheels. The boiler is made of the best iron, with water front and bottom; hand riveted. The wheels are all of iron, the drivers having an internal spur wheel attached to lags from their rims by which they are driven. It has compensating gear. This machine has a very novel and complete arrangement for reversing, effected by a spiral feather in the main shaft over which the eccentric slips, and is revolved by it. It is very easily operated. It is reversed by means of *one* eccentric. Self-checker; no notch in lever necessary. The two very desirable things in all portable machinery—*strength and lightness*—have surely been reached in a very high degree in the Eagle traction engine.

The Car Manufacturing Co., of Harrisburg, Pa., exhibited a ten horse power traction engine—the "Paxton." The simplicity and substantial character of its construction are prominent features of the "Paxton." It is of average weight and of very pleasing design; the weight is so distributed as to render the engine very effective on the road as a reliable locomotive. The drivers are of large diameters, affording better facilities for surmounting obstructions; are made of wrought iron complete, except hubs. The axle is made of hammered car axles of large diameter. The small pinions are all of steel castings. This engine has a powerful brake operated with a treadle; the engineer can stop the engine on any grade instantaneously by use of one foot. The platform and drawbar are attached to the main axle, and by means of this device the load does not pull on any part of the engine or boiler, but directly on the axle, thus entirely releasing the boiler and other parts of the machinery from any strain in pulling the load. The platform and drawbar are made to swing on the axle, and can easily be swung under the boiler, entirely out of the way of the engineer and fireman. To this platform are attached springs and a combination of levers which give a movement of six inches or more to the drawbar, giving the engine a number of revolutions before the total load is taken up. By this contrivance a load can be started as readily on a hill-side as on a level, the engine being allowed to accumulate speed before the main load is reached. This engine uses a reverse gear, patented by the *Car Company*. It is simple and compact, consisting of very few parts. The spark arrester is made and arranged on top, and can be easily thrown open to increase draft for starting fires. The engine is disconnected from propelling gear by a few turns of a small wheel on the end of the crank shaft and will secure the gear in that position; this is done without use of pinsor springs. The compensating gear is of large proportions and very sensitive. On icy or slippery ground the two wheels can be locked together by a simple device which can be operated while the engine is in motion. The driving axle of this engine is not attached to the side of fire-box, but is continuous, passing through housings in the rear of boiler, and a cast iron thimble, the whole being so adjusted as to make the shaft in a large degree independent of the boiler.

M. & J. Rumley, of Laporte, Indiana, exhibited a traction engine, manufactured by themselves. The boiler is made of the best material and in the best manner by experienced workmen. The dome is large and admits of carrying a large body of water, designed to protect the crown sheet in going up or down hill, and still retain ample steam room. Steam is taken in from the upper part of the inside of the dome through an inside dry pipe to the steam chest, insuring dry steam at all times. The flues are of the same quality as used in locomotives, and known as "special locomotive," extra heavy. They are three inches in diameter and sixty inches long on the ten-horse power engine, furnishing a larger heating surface than smaller ones. The engine is placed well back on the boiler, bringing much of the weight over the driving wheels. All working parts are so arranged as to be in easy access of the engineer, who stands on a platform which can easily be detached when desired. This engine uses the "locomotive reverse link motion," the bearing surface one and three-quarters inches wide, and using phosphor bronze link block, which it is claimed has no equal as an anti-friction metal. The engine can be started, stopped or reversed without a moment's delay or the stopping of the engine. The gearing is simple and strong, consisting of a straight train of spur gearing, with wide face, running on large and stong bearings. The pinion on the main shaft slides on a feathered key, held in place by a set screw, connecting the engine for traveling with the propeller, by sliding into gear. When thrashing this pinion is slipped back on the shaft. In the gear is a large intermediate spur wheel running loose on a large stud with long bearing. This stud is firmly secured to a large cast bracket, of such size and so constructed as to form a support or rest for the outer pillow block. This is the only bracket on the boiler to which gearing is attached, and it is claimed that the strain on the boiler occasioned by transmitting power from one wheel to the other is entirely overcome. This intermediate wheel in engaged with the compensating or equational gear, and revolves on an independent counter-shaft, which has two spur pinions, one at each end, that engage with the spur wheels on the driving wheels. The driving wheels are made of wrought iron, except hubs, which are cast; corrugated tire eight inch thread.

Case & Willard, Battle Creek, Mich., C. Fairbanks, Agent, Indianapolis, Ind., had on exhibition one of their ten-horse-power traction engines, the "Advance." This engine, in a general way, is decidedly modern, and embraces some features worthy of especial note. By means of short clearance it utilizes steam in a very high degree, and by thus using steam expansively a point of economy is reached making a marked decrease in the amount of fuel and water necessary to carry ten-horse-power force. Steam is supplied to this engine by means of a dry-pipe. The steam is taken through a dry-pipe leading from near the top of the inside of the dome, through the boiler to the smoke-box end, exposing the pipe to the heated gases that escape through the smoke-stack, thus supplying the cylinder with dry steam, and enabling more power with a given boiler pressure than when steam is taken from the outside of the dome. The engine has a frame with the metal so arranged as to give great rigidity and strength. The cylinder is a separate casting bolted to the end of the frame which forms the cylinder head. The crank disc is made large in diameter, objectively to balance the engine. The cross-head is of an entirely new pattern, and is conspicuous for its utility and graceful design. The cross-head pin is of steel and of large diameter. The distribution of the machinery on the boiler equalizes the weight, so that the fore wheels can not "rear up" while the engine is traveling up hill. The crank-shaft being directly over the counter-shaft it is claimed greatly lessens the strain on the rivets where the fire-box is attached to the shell of the boiler. The piston is composed of the steel rod head and two self-adjusting rings, without steel springs or studs. The crank-shaft is steel and of large diameter, running in babbitted bearings. The cylinder is relieved of water by having both ends connected by pipes to one three-way cock, and discharging into the smoke-box end of the boiler. This cock is opened from the platform, and renders the escape noiseless. The steering apparatus is placed on the right-hand side of the engine, placing the operator in line with the hand-wheel and separator-pulley. This arrangement enables the operator to have a full view of all the working parts without leaving the platform, and have instant control of the entire engine. It employs the *Marsh* reversing *device*, which is a practical steam brake. In descending a hill the speed of the engine can be instantly checked, or the engine may be stopped or started without touching the throttle. The driving-wheels have cast-iron hubs, with long bearing for axle, wrought-iron spokes, and cast-iron rim. Attached to the steering chain are heavy steel springs with a tension of 4,000 pounds, to prevent the chain from sudden shock. There is also attached to the draw-bar of this engine a spring of several thousand pounds tension, thus relieving both the load and the engine from shocks. The boiler of this engine is made of the best charcoal hammered iron of the tensile strength of 50,000 pounds. The boiler has, in addition to the usual safety appliances, a fusible safety plug in the crown-sheet, provided with a central cone of soft metal, which will melt out in case of low water. Through this opening the steam will force its way and extinguish the fire. The crown-sheet inclines down and backward, insuring its being covered with water in going down hill. The heating surface of the boiler is large, having forty 1¾-inch flues 69 inches long, with deep fire-box.

The Geiser Manufacturing Company, of Waynesboro, Pa., J. A. Vancamp, Agent, Indianapolis, Ind., exhibited one ten-horse power traction engine. This engine, completed and equipped for use, is stylish and attractive. Some things in its design and construction are worthy of special note. The boiler is of the usual locomotive style—open-bottom fire-box. The boiler has an attachment to the crown-sheet retaining enough water that down grades can be made without leaving a dry surface. This feature of the Peerless is an improvement of no small significance. The cylinder and steam-chest are cast in one piece, leaving only two joints to make. The driving wheels are very large, giving a large surface in contact with the ground. In case of plowing, two additions to the wheels can be readily attached, thus greatly increasing the tread surface of the drivers, which is important in drawing heavy loads over soft ground. The steam-pipe from dome to steam-chest is very short, composed of two parts with but three ground-ball and socket joints, easily taken apart with an ordinary wrench. The hubs of the driving wheels are of cast-iron, into which are secured wooden spokes by means of a plate bolted to the side. These spokes can be tightened when necessary by means of bolts in the hub, which, acting on a cone ring placed in the center of the wheel and across the ends of the spokes, forces them outward into the rim, making a tight wheel. The tire is wrought iron; cleats, full width of the face. The felloes are made of malleable iron, with pockets to receive the spokes and are bolted to the tire. These wheels are very strong, and not so rigid as wheels made entirely of iron. Any ordinary mechanic could make and set a spoke in case one should be broken. The compensating gear is made of spur wheels; is strong, simple and dust-proof. The motion of the engine is reversed by the "Landis" patent reverse and variable cut-off, using but one eccentric, which, it is claimed, embodies all the advantages of the link motion. No part of this device is in action, except when in the act of reversing. The steering attachment is quite simple and easily controlled by the engineer. The gearing is protected from jar when starting heavy loads or striking an obstruction on the road by rubber cushions. The manner of detaching the traction gear when used as a plain engine, is simple and convenient. The traction attachment is so arranged as to cause no strain on the boiler.

The Springfield Engine and Thresher Co., of Springfield, Ohio, Mat. Ives, Agent, Indianapolis, Ind., exhibited a traction engine. This engine, in many respects, bears a close resemblance to other traction engines, yet it has a number of distinctive features. The crank shaft is steel and very strong. The crank is pressed on the shaft by machinery, thus lessening the possibility of slipping or giving. The crank-pin is set mathematically square with the crank and exactly parallel with the shaft, thus making the journal run cold and noiselessly. It is claimed for this engine a very large factor of safety and working stress, reached by actual test upon entirely scientific principles. As a result, the engine will travel safely and convey heavy loads over rough roads, the stresses being much below the elastic strength of the material. By means of a feed pipe the water is heated to 200 degrees before entering the boiler. The brake is powerful and when necessary the engine can be stopped with it in an instant, when it has on a full head of steam. The engine is set to furnish power for separator or other machinery by means of a set-pin in the hub, held in place or detached by a set-screw. The platform is easily removed or attached. The engine is so arranged that everything which is to be handled is under the control of the engineer without turning. The boiler is made of the best charcoal-hammered iron for the shell and flange iron for the heads. The tube sheets and firebox plates are extra heavy and braced and stayed in such a way as to make them as strong as the boiler. The crown sheet has the usual slope, insuring it always covered with water when on steep grades. The longitudinal seam of the barrel is double-riveted. The stays are so placed on the boiler that it is as strong at one place as at another. The firebox is entirely surrounded by water, and uses the circulating water bottom. The crown sheet is set low so that if there be three inches of water on the highest part the water will be prevented from priming and will still furnish dry steam for the engine. The feed-water is led in such a way that it helps the circulation of the water. The boiler is tested with a hydraulic pressure of 150 lbs. to the square inch, and both the engine and boiler are tested by a high steam pressure.

The Watertown Steam Engine Company, Watertown, N. Y., J. B. Parker, Agent, *Indianapolis, Ind.*, exhibited a traction engine. This is manifestly a good engine, and has some points of especial merit. There is a direct connection of the cylinder and dome, permitting very short steam passages, and, it is claimed, preventing condensation in the cylinder by immediate contact with the dome, thus insuring, by actual test, a great economy in steam. The engine is placed centrally, exactly balancing the load on the boiler, thus compelling the strain of the engine to draw equally on all parts and in direct line of the boiler, which prevents all diagonal or cross strains on the boiler. It permits the use of two pulleys, driving two machines at the same time, or enabling the separator to be driven from either side of the engine. The cylinder has the whole boiler as a foundation, and is fastened thereto by a solid riveted joint. Any part of the engine, gauges, valves, throttles, etc., can be reached from the ground by the engineer, and the working parts can all be reached from either side of the engine, which can be stopped from either side. The connecting rod grasps the main shaft in the middle and has a wide bearing on either side, avoiding twist. Both bearings of the main shaft, together with the guides and cylinder head, are contained in the same frame, being thus kept in line. This head frame is very solid and substantial; is cylindrical, and surrounds and protects the working parts. The crank has a counterbalance, carefully adjusted. This engine uses a governor, controlled by a *spring speeder* actuated by a hand wheel, that will instantly change and regulate the speed to any desired rate without changing pulleys or stopping engine. The governor is provided with a stop motion and self-oiling device. The pump is so arranged that the water may be repeatedly forced through the heater until a very high temperature is attained, and can also be made available for throwing a stream sufficient to lay dust, and possibly put out fire. This pump is quite readily taken apart for cleaning or repairs. This company has designed a contrivance as a spark-arrester, and yet, it is claimed, allows all necessary draft. This device consists of a cast-iron bell suspended over the inner pipe, which arrests all sparks and lodges the heavier ones in the dead-air space between the inner and outer pipes, while the lighter ones are caught by a wire screen covering the whole. The exhaust steam is carried into the smoke-stack (at the bottom of the smoke chamber), thus securing an even draft from the lower tubes. All parts of these engines are interchangeable and can be duplicated. The rear axle passes back of the fire-box, throwing all heft in front, preventing "rearing" in going up hill, and uses closed link reverse. If the belt should be thrown off, the engine is immediately stopped by means of an automatic slot. No packing in the cylinder or steam chest; turned axle; driving wheels, made of either iron or wood; a heavy brake; a driver's step, and seat on steel springs.

Nichols, Shepherd & Co., Battle Creek, Michigan, exhibited two traction engines; one a ten-horse power, the other a six-horse power. It is not putting it strong to say, that this engine is very unique, and a beautiful piece of machinery of its kind. The shell of the boiler is constructed of the best selected metal, on a par with that used on modern locomotives. The fire-box is made in a very strong manner, of steel, of tensile strength of 55,000 pounds. The flue-sheet in the fire-box is one-half inch thick. All the holes for flues are bored. The fire-box is entirely surrounded by water. The dome is made of extra size and hight, situated midway of the boiler, and thus collects steam equally from all parts, tending to obviate priming. The fire-box has the usual sloping crown-sheet. The water spaces around the fire-box are very large, permitting the descent of all impurities to the large water bottom, where removal is easy. The flues are the best American lap-welded, and of extra thickness. Copper thimbles are used on the ends of the flues, tending against corrosion or leakage. The seams in the largest boilers are double riveted where the severest strain comes. The glass water-guage is placed near the boiler, as a means of better protection. This company uses a new spark-arrester—a patent of their own. A blower is provided, by which "live" steam can be used in forcing the draft when necessary. A "lock-up" "Pop" safety-valve, with nicked seat, is used. The steam-guage is of the improved Bourbon style, with polished metal face, and is provided with the patent *bulb syphon.* The axle is massive, of wrought iron, and passes entirely beneath the fire-box. The brake is simple and powerful. The door of the fire-box is in two sections, and made with two thicknesses of wrought metal, every part fitting closely. The frames around the door and draft-opening are of solid wrought iron, two inches square. The front of the boiler and the fire-box are held together by heavy rivets, which pass through these wrought iron frames. The draft opening has a perfect covering by which to regulate draft and obviate danger of fire. The fire-box is stayed to the shell in every direction by strong stay bolts. The crown-sheet is provided with a fusible safety plug. The cylinder is entirely "jacketed," and of the locomotive style. The piston is fitted with metalic packing rings, adjusted by steel springs. The valve is made in the locomotive style. The connecting rod is made in the same style, with brass boxes at each end, of extra size and large bearing surface. The crank is a perfectly balanced disc, forced upon the main shaft by enormous screw pressure. The main shaft is of cold-rolled steel, of extra size. The main shaft boxes are of brass, made in four pieces, and adjustable from side and top. It has an automatic self-feeding lubricator, which supplies the valve and cylinder. The hollow frame, or bed of the engine, is utilized as an efficient heater. The "feed-water pipe" extends from end to end, through the centre of this hollow bed. The exhaust steam also passes through the bed and circulates around the feed-water pipe. thus heating the water. The check-valve is provided with a drip-cock to prevent freezing. The driving wheels are made entirely of iron, and drive from the rim instead of the hub. The engineer can reach all working parts without stirring from his position.

The Harrisburg Manufacturing Co., Harrisburg, Pa., F. Johnson, Agt., Indianapolis, Ind., exhibited three traction engines. These engines made quite a handsome appearance and did their work with great promptness and ease. The engine is mounted on very solid bed plate on the boiler. By extension of the boiler shell the traction gear is entirely independent of the boiler. Wheels, wrought iron; axles, solid wrought iron; drive wheels, five feet and four inches in diameter.

This company also exhibited one six-horse power portable; no points of especial merit advanced, yet its owners claim it a very excellent engine.

Gaar, Scott & Co., of Richmond, Ind., exhibited a traction engine, a ten-horse power; they also manufacture eight, twelve and fifteen-horse power traction engines. This company has been manufacturing traction engines for eight years and shows no disposition to "fossilize," but, as shown from their engine, have kept pace with the great procession of progress. It is only a just tribute of merit to say that their traction engine is a symmetrical combination of parts into a machine not only attractive, but highly adapted to the purposes for which it is made. The design, material and workmanship are excellent. The boiler has the water front and bottom, and is made of the best iron. The truck wheels are all of iron, the drivers having an internal gear wheel, by which they are driven, attached to their rims, relieving the spokes of any strain. A spiral groove or corrugation in the roller on which the guiding chains wind causes them to always wind alike, saving time in taking up slack, in guiding and holding it steadily in its course. It uses the reverse link motion, such as is used on locomotive engines. The traction gearing and compensating gear show the marks of efficiency and durability. The engine is very compact and convenient, and it is claimed to work with the greatest economy and to possess more than an average power in the field or on the road, being fully ample to move its train through plowed fields or over rough roads.

Robins & Co., Richmond, Ind., exhibited one of their ten-horse power traction engines which combined several points of especial merit. It is very easily put out of gear, so that it can be moved by horses, as any other portable, if so desired. The bed plate to which the engine is attached is of unusual strength, and so constructed as to secure rigidity of working parts. The boiler is supported on springs over the rear axle which break the force of shocks occasioned by passing over rough places. Locomotive link made entirely of cast steel, with wearing parts hardened and so hung as to be easily reversed under a full head of steam with thumb and finger. The two eccentrics are cast together, so that when one is right the other must be. The arms of the rock-shaft are one and a half inches above the center of the shaft when the valve is on half-stroke, by which arrangement it is claimed there is much less wear of parts, as the engine is always run in one direction in doing regular work. The axle is made of three-inch square steel. Both hind wheels drive at all times on curves. The bed plate is so arranged as to prevent getting out of line. There are four pinions in compensating gear, which, it is claimed, add one-third to its strength.

John M. Pitcher, Sugar Creek, Ind., exhibited a traction engine—where manufactured, the committee could not learn, but from exterior view it engrossed the essential features of a traction engine. In addition, Mr. Pitcher exhibited a spark arrester and heater of his own invention, which is certainly a very ingenious and useful contrivance. It burns all the sparks and claims to save one-half fuel and one-half work in firing. The boiler is jacketed from the fire-box to the smoke-box. The jacket on top is five inches from the boiler and two inches at the bottom. The draft is thrown under the jacket with the circular smoke-stack, and passes out in the rear end of jacket. Between the boiler and jacket is a cross-piece extending one-half around the boiler, dividing the draft on either side. A hot-air pipe attached to the rear end of jacket on the lower side extending into the ash-pan produces a hot instead of a cold-air draft.

The Huber Manufacturing Co., of Marion, Ohio, exhibited a traction engine of excellent worth. In a general way this engine is made of the best quality of material, and is constructed in a very workmanlike manner. The boiler and driving wheels are unusually strong. The great facility with which it responds to the will of the operator, and its manifest strength and general adaptation to the various uses of a traction engine, reflect very creditably upon the industry, intelligence and enterprise of its builders.

Russell & Co., Massillon, Ohio, exhibited a traction engine of their own manufacture, very attractive and graceful in its various evolutions. After several efforts the committee failed to find any one prepared to speak for this engine, but from what the committee observed, it has no hesitation in saying the Russell & Co. traction engine has no occasion to hide its maiden face in shame in the presence of its elder sisters.

STEAM ENGINES.

The Harrisburg Car Manufacturing Co., exhibited a Paxton portable engine of ten-horse power. These engines are made of different sizes, varying from four to fifteen-horse power. The bed and saddle are cast in one piece in such a form that it is impossible for it ever to become out of line. Even if it should be detached from the boiler for any purpose it can only be replaced on the same in the way it was originally mounted. The bed is of handsome design and very strong. The bearings in the saddle are very long, and the bed is rigid and receives the entire strain in working the engine, the boiler simply carrying the weight. An expansion bracket carries the cylinder end of the bed; a groove in the bracket is so planned as to receive the tongue on the engine bed, the two being free to move backward and forward, due to the expansion of the boiler, and held in place by an expansion bolt, which prevents the engine from jumping out of its place on the bracket. There is a steam space around and enveloping the entire cylinder by the exhaust from the engine; this arrangement entirely excludes the atmosphere from the cylinder. The steam, after having passed from the side of the steam chest half way around the cylinder, escapes into the heater. The crank pin, the cross-head pin, and all connections of that character are made of steel. The governor is provided with a stop motion and feeder. A drain cock is attached to each end of the cylinder. The pump is not attached to cross-head, but to the opposite side of the boiler, and is operated by a separate eccentric, and carries the water, after being heated to the boiling point, into the boiler so easily that there is little strain or wear on the pump. The boiler and fire-box are made of the best material and are strongly put together. The smoke-stack is hinged upon a cast iron base, and is provided on top with an improved spark arrester.

The Anderson Foundry and Machine Works, Anderson, Ind., exhibited a ten-horse power portable engine, "The Anderson Chief." This company make eight, ten, twelve, eighteen, twenty and twenty-five-horse power portable engines. The description of one size covers all. This engine has the regular locomotive wagon-top boiler, which is an extension of the fire-box above the cylinder, for the purpose of securing still more room for additional flues, heating and steam surface. This company manufacture their own boilers; the riveting is done by hand, with the keystone rivets. The fire-box is stayed with from seventy-two to one hundred and thirty stay-bolts. Circular water-bottom and crown-sheet, giving a free circulation of water. This engine has a very capacious heating surface, adapted to either coal or wood. It uses steam packing, made of metallic rings, which expand by the pressure of the steam, and is entirely self-operating. It uses the regular locomotive slides and cross-heads. The connecting rod and boxes are made exact, so as not to knock, cut, or get hot. The piston-rod crank-wrist and valve-rod pin are of steel. In the knuckle-joint of eccentric rod, is fitted an open brass box with set screw to take up all the wear. There is attached to the side of the fire-box a steam pump of recent invention which is neither an inspirator nor injector, but will heat the water by forcing it through the water pipes of the heater, and from there through an anti-freezing check and stop-valve, into boiler at the bottom of the fire-box. In addition to this there is an independent pump attached, which is able to supply the boiler independent of the motion of engine. It has a lock safety-valve spring made of nickel plated steel; elasticity not affected by temperature, and has a key thus protecting it from being tampered with. The "Chief" has the "boss spark arrester and smoke stack." It is double at the crown, fine and strong steel wire; bonnet can easily be raised from below with an adjustable rod. The exhaust steam and steam from the blower pass through it. This arrester conducts the sparks to the ground at the engine, through a tube on the outside of stack into a box. The sparks will glance off over the cone wire, then are arrested at the flange in the bonnet, then fall back down into the space in the double stack, from whence they are forced down the outside tube by the exhaust steam. The engine is mounted and well balanced on a strong wagon well adapted to its use.

Chandler & Taylor, Indianapolis, Ind., exhibited a semi-portable engine. Ten-horse power. The engine is of the well known form introduced by this firm some years ago, and the novelty of the new design consists mainly in arranging the parts in a simple and substantial manner, so as to combine the advantages of a stationary engine with those of a portable. This engine has no "clap-trap" features about it, but possesses the essential requirements for an every day drive-ahead business. The main shaft, piston rod and crank pin are made of steel; the cross-head stuffing-boxes and glands are made of brass The best and most endurable material is used in its construction throughout. The boiler is mounted on a substantial framework of timber, to which, also, the engine is attached; the weight of the boiler gives sufficient steadiness to dispense with the other foundation, making the machine complete within itself.

The engine being entirely disconnected from the boiler is not affected by its contraction and expansion, while the boiler is released of all strain except its legitimate work of generating steam. The engine can be taken off its foundation without disarranging its parts. The boiler can be used for steaming purposes entirely independent of the engine, as it is supplied with an independent feed-water injector which will raise water from a well of ordinary depth and feed it into the boiler whether the engine is running or not. These engines are made of different sizes, suitable for all kinds of work.

The Watertown Steam Engine Co., Watertown, N. Y., J. B. Parker, Agent, Indianapolis, Ind., exhibited a plain, side-valve, stationary engine. One main point made for this engine is its great simplicity, there being no complications of cams, levers, rock-shafts or tripping-gear, and it is claimed can be easily comprehended and cared for by any engineer of ordinary intelligence. It has positive valve gear and can be run at any desired speed without affecting its regularity or economy. It has an extremely sensitive governor, made after this company's original design, and is especially prompt in its action. The point of suspension is placed very low, answering a slight variation of speed with so wide a range of movement that the governor will arrest and control the engine within a few revolutions and insure the closest possible regulation. From its peculiar shape the valve covers a large area by a very slight movement, extending from a cut-off so short as to hold the engine under its heaviest pressure with no load except its own friction, up to the point when it meets the fixed cut-off of the main valve, which lacks very little of the full stroke. The whole range of adjustment is under full control of the governor, differing from the single eccentric cut-offs, in that the single eccentric must act before the middle of the stroke or not at all. The short stroke and high speed of this engine, it is claimed, give a quicker expansion, permitting the use of a fly-wheel of less weight, with greatly reduced fluctuation and variation. These engines are supplied with an automatic cut-off which is certainly a masterly piece of ingenuity. The object of this invention is to vary the position of the valve, thus regulating the amount of steam let into the cylinder necessary for the work performed. By this cut-off the point is shifted to an earlier or later stroke. This company manufactures all sizes of both stationary and portable engines.

The Geiser Manufacturing Company, Waynesboro Pa., exhibited one "Peerless" portable steam engine. The cylinder and steam chest are combined in one casting, making only one joint on the steam chest. The cylinder is made with one end closed, except a small opening in the center in which a brass stuffing box for the piston-rod is inserted, leaving only two steam joints in the cylinder and steam-chest. The bolts which secure the cylinder-head and steam-chest cover are all made with head and screw-end for nut, instead of studs. The cylinder is so mounted as to allow the boiler to expand without straining either itself or the cylinder. The bed-plate is of the side-bed form, and is turned off at one end for the cylinder and at the other for the saddle. The support between the boiler and the bearings is cast hollow, through which all the water, while cold, used to feed the boiler, must pass on its way from the tank or well to the heater, absorbing the heat which would otherwise cause the bearing and journals to become hot. This device is covered by letters patent. The piston-head is made in two parts, with metallic self-adjusting rings, having no bolts, nuts or springs, and requiring no adjustment whatever. The rings readily adapt themselves to the surface of the cylinder, and will remain steam tight until worn out, thus, it is claimed, causing a minimum of friction. The stuffing boxes are very long, made of brass, with a cap screwed over the gland, which draws the packing square. The pump has some improvements of decided value. The heater is an improved device, attached directly under the engine, and is made of two pipes, one within the other. The outer, or shell, is a long hollow casting, the inside, or exhaust pipe, passing through it. All parts of the engine are interchangeable.

The same firm also exhibited a "Domestic" steam engine, which is quite a novelty in the line of steam power. The boiler is an upright tubular. The tubes are so arranged as to distribute the heat equally through them, and utilize the same. On the top of boiler there is a smoke bonnet provided with holes through which the tubes can be cleaned without removing the bonnet, simply by turning the circular plate around. They also serve as a damper to regulate the draft. The engine-bed, cylinder, steam-chest, both bearings of the crank-shaft and guide-lags are all combined in one casting, making it impossible for any of the parts to get out of line. The bearings are made of the best babbitt metal, and are protected from the heat by means of a chamber under the bearings, into which the cold water is forced before entering the heater, thus keeping all the bearings cool. This engine is semi-portable, and can be readily moved from place to place; is adapted to many kinds or farm work. It occupies little more space than an ordinary stove. The two-horse power has developed over three-horse power, and will work on one bushel of coal per day.

Frey, Sheckler & Hoover, of Eagle Machine Works, Bucyrus, Ohio, exhibited one of their "Siamese Twins Duplex Engines." It has two cylinders with one steam chest; slides front cylinder-heads. The boxes and the bed-plate are all cast in one complete piece, obviating in all these parts leaky joints and rusty bolts. The cylinders and slides are bored out simultaneously, which makes them unerringly true. The shaft is made of the best cast steel, having the eccentrics and cranks solid with it. The piston-rods, cross-heads and slides are all made of steel. In the movement of this engine there are no dead points to cause unequal motion. It will start from any point at the highest speed, and has no balance wheel; will stop in an instant. It is claimed that the double action counteracting diminishes the strain on the foundation, and that the power consumed by balance wheel, belt, tightener, cranks and pulleys is saved. The mill or pulley can be attached to either side of the engine. This company manufacture several varieties of steam engines.

The Springfield Engine and Thresher Company, Springfield, Ohio, exhibited a portable steam engine. This engine is light and small, yet it is claimed for it a driving capacity equal to engines of much greater weight. Among the more salient features of this engine is noted, its economy of fuel and economy of steam. The valve opens a wide port at commencement of stroke, keeping a full port open during time steam is admitted into cylinder, giving a quick cut-off. It is claimed as a reasonable consequence, that as the amount of steam required is reduced there should be a corresponding reduction in the size and weight of boiler and other appurtenances about the engine. This company make a special point on the superior quality of material used in the construction of their engines. Two pumps are employed, one a cross-head, the other an independent steam pump. The last named takes steam direct from the dome, and the boiler can be filled without running the engine. The heater pipe is put under 600 pounds hydraulic pressure, and after the pipes are attached to the pump they are all tested under 215 pounds cold water pressure. These engines are very neat and desirable in appearance.

Deering & Co., Indianapolis, Ind., exhibited one semi-portable engine. This is a four-horse power engine on skids, and occupies a small space. It has a return-flue boiler and the usual fittings and connections of larger engines. This is a neat, strong and very desirable engine, where only a small power is required.

The Vinton Iron Works Co., Indianapolis, Ind., exhibited a detached portable engine. This is a high speed engine, 8½x10, simple and compact in construction. The workmanship is excellent. It has a bed in which the various parts are so distributed as to give great strength and steadiness to the engine. It is so mounted on the skids as to require little space, and bears the marks of strength, simplicity, and durability throughout.

TILE CRUSHERS AND BRICK MACHINES.

Fate & Freese, of Plymouth, Ohio, exhibited one "Ohio Tile Machine," which is a combined clay-crusher and tile-mill. This is a new mill, patented in 1884, and among its commendable points may be noticed its marked simplicity. The machine is small, compact and durable, being driven at successful work by an eight-horse power engine. It rolls out tile of a good quality, very compact and smooth, and it is claimed works with great speed. The crusher attachment consists of two cast steel rollers 15 inches in diameter and 18 inches long, and are provided with adjustable scrapers. The clay is placed in the hopper above the rollers, which force it down into the cylinder and in which compressed condition and while on its way to the dies, it is further ground and mixed by augurs contained in the cylinder; the rolls act as a force or positive feed. In capacity it makes all sizes of drain tile. It also has a brick-machine attachment, requiring but a few minutes to attach it ready for use. The brick machine casts brick very hard and smooth, which can be packed on leaving the machine.

Chandler & Taylor, Indianapolis, Ind., exhibited one "Phœnix Drain Tile Machine," which can be run by either horse or steam power. The tempering hopper is made of boiler iron. The upright shaft, which is of wrought iron, four inches in diameter, passes down through the center of this hopper and by means of wings fastened to the shaft, thoroughly tempers the clay and prepares it for the pressure chambers. At the bottom of the hopper are two openings leading into the pressure-boxes; through these openings the clay is forced at each revolution by means of a feed wing fastened to the upright shaft. By means of a false plate one end can be closed, thus making either a single or double machine. The crank at the lower end of the upright shaft has a roller upon it which operates against steel surfaces on the plunger, thereby giving it a reciprocating motion and forcing the clay through the dies alternately at either end of the mill. The side plates of the pressure-box are strongly locked together as a guard against the pressure of the mud. The mill is easily taken apart by the use of a wrench.

The same firm also exhibited one Eureka Drain Tile Machine for Horse Power. This machine is a radical departure in plan of construction and operation from any heretofore made. It is equally well adapted to steam and horse power. The tempering drum is made of boiler plate and is capped with a hopper-shaped ring. The tempering knives are set in such a way as to allow the clay to descend into the mud chamber by the force of its own gravity, keeping that chamber always supplied without force or effort. This machine has a feed wing "wonderfully made," the simplicity and efficiency of which is very commendable. Each of the last two described machines make tile of all sizes up to 12½ inches. Each of these machines has a "railway" cut-off table. This company has a brick-machine attachment and clay crusher, both efficient.

Penfield & Son, of Willoughby, Ohio, exhibited a general assortment of clay machinery. Their brick mill is made entirely of steel and iron, is heavy, strong and durable. The reciprocating motion given the plunger is made by the use of a cam working in a friction roller, both of which are made of steel. The pugging shaft is of steel, furnished with suitable knives for cutting the clay and a large feed wing to force the clay through the port-hole into the pressing box. These machines are made either single or double-acting, one cam doing the work in either case. The clay, as it is ground and fed down into the machine, is pressed out on a felt-covered rubber belt, on which it is cut into bricks with wires attached to a cutter frame, which is operated by hand. The brick are placed in the hacks by use of forks, and not touched or handled by the hands. The machine works the strongest clay, which is thoroughly tempered and moulded stiff enough for immediate hacking. No moulding sand is required. With the same machine, by a simple change of die, any size or shape of brick may be made. The brick die, it is claimed, is one of the most important features of this machine and is covered by patents. The hack die receives and forms a bar of clay, having somewhat rounded corners. This bar, in passing into the finishing die, which is slightly smaller and square-cornered, is lubricated by allowing oil or water to flow upon the clay bar. There are several sizes of this machine, the largest of which can be operated with a ten-horse power engine. The *tile mill,* it is claimed, has superior strength, enormous capacity, and light draft. The general structure of this machine is the same as the brick machine exhibited by Penfield & Son; it is no *fossil,* but displays a general line of improvements over former years. No. 7, their largest machine, can be driven by a ten-horse power engine.

The same firm exhibited the Penfield Patent Corrugated Clay Crusher. The frame is all made of iron and very heavy. The crusher is double geared. The rolls 15x26 inches, and cast in a chill. All strain is removed from the frame by wrought iron rods and heavy car springs. The patent on these crushers consists of a spiral corrugation, extending the entire length of the roll. By this device it is claimed clay is much more thoroughly crushed and pulverized, while stones are quickly conveyed to the end of the roller by means of the spiral corrugations, and pass away through an opening in the frame. These spiral corrugations are so arranged that the projection in one roll fits into a corresponding depression in the other roller.

The Vinton Iron Works, Indianapolis, Ind., exhibited a Potts Hydraulic Brick and Tile Machine. These mills are constructed on an entirely new principle differing from others in several important respects. The principal one in the way of conveying motion and pressure to the plunger, which is accomplished by hydraulic pressure, produced by a set of three plunger pumps forcing water into a cylinder, where it operates a cylinder head, in the same manner as steam against the piston head. These plunger pumps are driven by eccentrics, and force water alternately into the front and rear end of the cylinder. The direction of the stream of water is determined by the valve, which is automatically reversed by a lever in connection with a rod attached to the plunger. The length of stroke of the piston, and consequently of the plunge, can be varied in an instant by set collars on the reversing rod, giving any length of plunge from one to twenty inches. On a twenty-inch plunge it will mould three to four-inch tile, and thirteen five-inch tile. The water is taken by the pumps from a tank, into which it is returned, from the cylinder. By a stopcock on the pipe from the tank to the pumps, the supply of water can be regulated, so that without changing the speed of the engine the mill can be run at any desired speed, from one plunge in three minutes, to four or five per minute. A safety-valve is placed on the pipe connected with the cylinder, which opens whenever from stiff clay or any obstruction the pressure in the pressure chamber rises to one-third the breaking strain, so that there is no reasonable possibility of a break. The front area of the piston is only one-fourth the rear area, so that the plunger is drawn back four times as fast as it is driven forward, which secures an economy of time. In the Potts Geared Mill the power is transmitted from the band wheel by gearing two pair of spin wheels fifty-two inches in diameter, with an eccentric between them, by which the plunger is driven forward or backward. The power is carried from the twin drivers to the eccentric by a pin which passes through both spur wheels near the rim. This pin is given sufficient play to act as the single-tree on a wagon, dividing the strain equally between the two drivers. The sides of the mud-box and gearing are so proportioned that the weakest part of the mill is the bevel wheel and pinion.

By the same firm, a Potts clay disintegrater, patented July 7, 1885, was shown. This machine consists of a heavy roll or cylinder with projecting bars or scrapers running the length of the cylinder, and extending about one-eighth of an inch beyond its surface, with a vibrating back, leaving the center on which it is hung a regular distance from the roller. The roller can be set any distance from the breaking bar, regulating the fineness with which it will pulverize the clay. These crushers, with about four-horse power, will crush enough clay in ten hours for 100,000 brick. The machine is immensely strong, and will crush quite large stones within its "pondrous jaws."

The same firm exhibited a tile table, patented April 21, 1885. It consists of an endless belt which carries a number of receivers, each the length of a tile, with sides that can be removed in or out, and fastened by thumbscrews. This affords a rigid holder that supports the tile on the sides. The belt at the end near the mill runs over a triangle, the axle of which is so supported on springs that the holder is brought up under the tile at once, so that the tile are not marred. The sides of each supporting holder are cut out so that the off-bearer can catch hold of the tile and lift it out of the pans. One table is used for all sizes of tile. There is also a double holder used with the same table, which carries three and four inch tile in double streams. As the tile can be cut running or standing, this table can be used equally well on auger mills. This company also exhibited an adjustable brick die.

George Tiffany, of Tecumseh, Mich., exhibited a crusher, "The Success." This machine is not an effort to produce a cheap machine. It is certainly of great strength, and does its work with irresistible force and certainty. There are two heavy iron plates tied together by heavy wrought iron shafts and wrought iron plates and having long and rigid bearings. Four belts to each cap. Every part is readily accessible and may be removed without disturbing other parts. It has conical rollers, which, it is claimed, are the most effective known for removing stones from the clay; upon the same principle that a belt will run to the larger side of a band wheel, a stone will move toward the larger end of the roll and pass out of the opening in the frame. It has a large hopper, in which are arranged two triangular rollers or breakers which fill the bottom of the hopper and prevent the clogging of the clay therein. They move the clay from the sides to the middle of the hopper, and their points alternately take a portion of the clay and force it between the rollers with a great pressure. The combination of the triangular and conical rollers was patented in 1885 by Truman McKinney and Walter Soper, of Tecumseh, Mich.

The Wallace Manufacturing Co., Frankfort, Ind., exhibited a tile and brick machine, a clay crusher, a pug mill and a tile table. The tile and brick machine has two augers, the shafts of which are of steel and respectively 2½ and 3 inches in diameter (but no hollow shaft), that run in opposite directions, and do not throw the clay in layers in the shell of the tile. By the "positive feed" feature the clay is forced off the upper or top auger into the lower gum, thus preventing the "working back" of the clay. The "positive feed," it is claimed, causes the mill to feed even and sure and causes an even flow of clay through the dies into tile. The speed of the upper auger is only ten revolutions per minute and that of the lower twenty-five. The positive feed prevents the clay swimming in the gum. This mill will make large tile as easily as small ones, without loss, and can change the die from one size to another in five minutes. The dies can be adjusted to regulate thickness of shell of tile while the mill is in operation. There are no bearings in the mud in this mill. The boxes and bolts are all in convenient approach. The positive-feed device consists of a steel plate on the end of a plunge shaft entering on the fore end of upper gum at such an angle as to strike the end auger blades and force the mud off them into the lower gum, where the lower auger carries it forward through the dies. The plunge shaft and steel plate are worked by a lever that receives its force from a cam on one of the spur wheels. This mill is very strong.

The Wallace Clay Crusher, it is claimed, is sufficiently large to furnish clay for any tile machine. This company manufactures ten different sizes of these crushers. It separates the stones from, and thoroughly pulverizes the clay. The mill is strong and not easily clogged. It has an elevator and also a clod-breaker attachment.

The Wallace Pug-Mill is made of iron and steel, and compels thorough pugging in mixing clays.

The Wallace Tile Table has carriers which are so constructed, by bands passing over rollers, as to permit the stream or stick of tile to turn and not be twisted off. By an ingenious arrangement the hight can be easily adjusted by simply turning a crank.

H. Brewer & Co., Tecumseh, Mich., exhibited one "Brewer's Improved Tiffany Combined Tile and Brick Machine," which has added several valuable improvements within the past year. It is an auger mill and constructed with especial reference to being run by steam power, yet each machine can be driven by horse power. The machine is made wholly of iron and steel, and is fitted up with much accuracy. The auger-shafts are of solid steel, on which are attached chilled sectional augers which can be removed at pleasure. This mill moulds tile with polished surface inside and out. The pug-mill is vertical. In passing through the pug-mill the clay is well cut and worked by the knives, when it is received by the augers and forced through the dies. A strong point made by this machine in its claims to superiority in tempering clay is that no bracket is needed for attaching a core piece for forming the inside of the tile, which necessarily splits the clay and unless perfectly welded damages the tile. This machine forces the clay in a continuous stream until it is formed into tile.

The clay crusher, exhibited by H. Brewer & Co., has two conical crushing rolls with diameters respectively of 14 inches and 17 inches at the ends, and are 32 inches long. These rolls are secured to shafts which are three inches in diameter, and run in journal boxes 6 inches long. The journal boxes are fastened to an iron frame, and rendered adjustable by means of heavy rods, which connect the boxes at both ends of the rolls. The rolls are cast in iron moulds, and are thoroughly chilled. The two crushing rolls are run at unequal speed, which, it is claimed, has the effect to disintegrate the clay and cause it to be more readily drawn between them. When clay is thrown onto these rolls such of it as does not at once pass between the rolls begins to move toward the transverse roll, which is placed at the large ends of the two crushing rollers. The unequal revolutions of the two crushing rolls, taken in connection with the fact that the periphery of each roll has a varying speed throughout its entire length, will reduce all the clay, unless very large lumps, which, if persistent, will reach the transverse roll and melt under its crushing teeth. The transverse roll is placed a sufficient distance in from the ends of the crushing rolls so that all lumps of clay which have been broken by it will have ample opportunity to pass between the crushers, and not be crowded over their ends. The transverse roll is adjustable, avoiding the risk of breaking in contact with large stones. The speed of this roll can be increased at pleasure by a simple device. The crushing rolls are smooth, the result of which, it is claimed, is to keep stones from between them, which are displaced by being rolled overboard.

Frey, Sheckler & Hoover, Bucyrus, Ohio, exhibited a Tiffany Brick and Tile Machine and Clay Crusher. The Tiffany machine makes tile from two to eighteen inches. It is a horizontal machine thirty inches wide and ten feet long, and driven by a ten-horse power engine to its fullest capacity. This machine has a number of desirable features, as a combined tile and brick mill. It is driven by a six-inch belt; has tight and loose pulleys, which give it a motion of from two hundred to three hundred revolutions per minute, and is quite readily stopped and started. It is claimed that the sectional area of this mill is about two and a half times that of other horizontal mills, and only needs to be driven two-fifths speed to do the same work. The mill-shaft has a cog-wheel four inches face and one and three-quarter pitch, simply to do the grinding. The moulding is done by different gearing and by different shafts, working in different bearings, thus distributing the strain, which would otherwise be wholly on the mill-shaft and mill-wheel. The moulding is done by a propeller on a two and a half inch steel shaft, passing through the mill-shaft and running at a higher motion in an opposite direction to that of the large propeller on the mill-shaft. The hopper is only thirty-seven inches high, making it convenient for shoveling directly into the mill, or to carry the clay into the hopper from the crusher with or without elevation. In making curves, the "Centennial" has no spiral motion to the tile as it comes from the die, and will make curves of uniform thickness, through dies of from two to twelve inches.

The Centennial Cutting Table, along with the foregoing tile machine, is a contrivance of no small merit. It stands on four rockers, which permit it to be moved longitudinally to and from the machine. It is attached to the machine by a small chain and is moved by the web of the clay to the length of the chain. When the operator wishes to cut the web, he forces the table back toward the machine; then permitting it to move with the web of clay, he swings the cutting frame to the opposite side of the table; the strong steel wires passing through the clay, and cutting eight or nine brick or tile as the case may be. This company manufactures five styles of crushers. The one on exhibition, a No. 2, has sixteen-inch rollers twenty-four inches long, and will crush for two shovelers.

Fletcher & Thomas, Indianapolis, Ind., exhibited one set of brick machinery. The "Quaker" brick mill is large, strong, and of great capacity; can mould from 20,000 to 30,000 brick per day, driven by a ten-horse-power engine. The clay falls vertically into the press-box through an opening in the front side of the machine floor ten inches wide, and as long as the machine is wide, filling all parts of it equally. The pressure is applied horizontally instead of vertically, driving the clay against an inclined wall at the front of the machine, by which it is directed downward into the moulds directly underneath. By this there is secured a uniform density of the brick. By applying the pressure horizontally a set of trap doors, held in place by steel springs, yields to the pressure of any rock that may be contained in the mud, permitting it to pass out of the machine without risk of breakage or damage to the brick. The "Quaker" machine has a peculiarly constructed die, the object of which is to make it easy to remove brick from the moulds. The fingers of the die set squarely over the partitions of the mould, the space through which the mud passes being one and one-half inches narrower than the brick itself. The mud is forced to the bottom of the mould, out and up, filling it on the same principle that a moulder does when working by hand, leaving the sand without being wiped from the sides, thus enabling the bricks to slip freely when dumped. This company exhibited a *spiral pug mill*; one man can handle the clay for 20,000 brick per day, besides regulating the water. It is claimed that this mill tempers the mud and saves the labor of at least three men. This mill can be attached to any make of steam machines.

C. & A. Potts & Co., Indianapolis, Ind., exhibited one disintegrater which thoroughly crushes all kinds of clay, leaving it porous to water. It will, from actual demonstration by the committee, crush brick and stones. It is driven by direct belt on the cylinder and the apron against which the pressure is forced, dispensing with all gearings. This machine has but one roller or cylinder, 18 inches in diameter and 18 inches long. On the cylinder are 6 steel bars, imbedded, which extend its entire length and project ¼-inch beyond the face of the cylinder. The cylinder is made of chilled steel, and near the side of which is a steel apron or crusher, that closes its iron jaws sufficiently often and with an irresistible force to crush clay, brick, rocks, etc. This mill occupies a small space and is strongly made; will crush either wet or dry clay as fast as two men can shovel it in.

Nolan, Madden & Co., Rushville, Ind., exhibited one of their "Hoosier" tile and clay mills. The main frame of the tile mill is of box form, cast in one piece and cut out sufficiently to admit the gears on their shafts. It also forms a bridge-tree, supporting the strain caused by the backward pressure of the auger-shaft. In addition to this the frame forms the rear-end of the tub and is faced off in a lathe so as to insure the tub coming squarely into position with the main frame. The journals are all babbitted. The tub is cast in one piece, excepting that there is a cap on the opening at the top. It is cylindrical in form, and very heavy and substantial. The tub is large enough to grind the most stubborn clay, and to admit of its being thoroughly mixed before pressing into the dies. The bridge which holds the die cores is not smooth in this machine, but an original device is used instead. This consists of a cast steel "spider" with two or four arms, the front sides of which are toothed, each alternate tooth pointing in an opposite direction. The clay is forced out over the bridge, and over these teeth, inwardly in opposite directions in rough-sided columns, which interlock or knit together into a solid mass, insuring perfect tile. It uses a centering cone for setting the dies, by which great accuracy is secured in centering. The auger-shaft is three inches in diameter, turned perfectly round, and made of the best charcoal iron. The backward pressure of the auger-shaft is overcome by a cast steel "toe." The augers and knives are made of cast iron, cast in chills. There are two pairs of heavy gears in each machine. This machine uses a patent revolving cut-off table, which is a device with four arms each of which is provided with a half-circle large enough to receive and support the tile as it comes from the die. When the tile is cut off, the table is revolved one-quarter of its circle, which sets the tile on end upon a pallet, by means of which it can be removed without injury, and the same revolution brings another similar half-circle support in position to receive the next tile.

The Hoosier Clay Crusher exhibited by this company has chilled iron rolls 12 inches in diameter and 24 inches long. The rolls are driven by two pairs of gears, and the whole mounted on a very heavy all-iron main frame, so that there is no chance of springing or getting out of shape. The rolls are set in an adjustable box, by which they can be set further apart or closer together. These crushers are of very light draft and speedy in their work. The best material is used in their construction.

The Anderson Foundry and Machine Works, Anderson, Ind., exhibited a tile mill, "New Departure." For some reasons this machine is appropriately named. It thoroughly pugs or grinds the clay in a horizontal cylinder, then presses it into a perpendicular or pressing cylinder having a shaft and auger that runs at right angles with the pugging shaft, thus slicing and cutting up the clay into fine particles, thoroughly regrinding it before pressing it into tile, and in this manner the finest tile are pressed with a perfect body. Large tile are cut any length with an automatic cutting device, and are pressed from above with end down upon a pallet and carried away on the same pallet, thus preserving their perfect form, not breaking the grain of the clay, leaving the tile in excellent condition for glazing, if such should be desired. It is claimed that pressing the clay into a pressing cylinder from the grinding relieves the grinding cylinder from any lock pressure. By having no pressure in the grinding cylinder the clay can not be pressed forward in a spiral form, but is ground and then reground as it passes into the pressing cylinder. No bridge trees are used to support the cores in making large tile; the cores are supported by a double-extra strong pipe, binding the pressing cylinder and head jointly together. In this manner, it is claimed, the difficulty of cracking in drying when the clay is split by running over the bridge-trees is entirely avoided and overcome. The boxes or bearings are so situated and constructed that the clay or mud can not come in contact with them. The cutting-off device is automatic, and is simple and positive in its action, gauging the length of each tile, and is adjustable to any desired length of tile up to 30 inches long. This machine is very strong, compound geared, and handles a large amount of clay at a very slow speed. The gearing is very heavy. The main shaft and miter gear are of steel. Small tile is delivered by this machine on a horizontal table, and cut with wire. The machine is especially designed for steam requiring from fifteen to twenty-five-horse power. It has capacity for rapid work. This machine claims superior workmanship in the manufacture of large tile.

The Chief Brick Machine, exhibited by this company, is a late invention of very simple construction. It grinds its own clay and does its own moulding, feeding the clay down in front of the plunger, pressing the same horizontally, in such a way that the brick are of like density. It makes six brick with each stroke. No wires or knives are used. It keeps the clay in the mould without releasing the pressure until the filled mould is started out from under the press-box and is delivered over four iron rollers to the front of the machine, thus delivering the moulds with one-fourth the power and one-fourth the wear on the moulds. It is a more thorough temperer, mixing and grinding the clay with as many as twelve adjustable knives, so that the brick, it is claimed, will stand any climate, and will not crack in drying or burning. It fills the moulds solid, pressing sharp corners. With a lever near the striker the pressure upon the clay into the moulds can be quickly increased or decreased. It can be thrown in or out of gear in a moment. The machine delivers two moulds, or twelve brick at each revolution of the main shaft. The "Chief" is all iron and steel. The cylinder is of boiler iron, forty-two inches in diameter and forty-eight inches high, and has a strong iron base. All the bearings of this machine are strongly made and well babbitted.

PUMPS.

F. M. Myers & Brother, of Ashland, Ohio, exhibited several varieties, including *force* and *lift* pumps. The construction of these pumps is very simple. The diameter of the discharge pipe is large enough to admit an air pipe within, which passes from the projection of the cylinder up to the spout, where it is connected to the globe air chamber on top of the pump. By use of the air pipe within the discharge, is conducted the benefit of the large air chamber on top of the pump down to where the water passes from the cylinder into the discharge pipe. On account of the large air chamber, it is claimed for this pump, a steady stream of water through the discharge pipe. The hose coupling can easily be attached to the spout, and water forced to any part of the building or grounds. It will throw a steady stream sixty feet from the end of nozzle. The entire pump is constructed of iron, and so firmly put together that it is impossible to injure it in any way by subjecting it to the most severe test while forcing water under heavy pressure.

The Submerged Cylinder Drill Well Force Pump has a straight barrel, and is so constructed that it will go in a bored well three inches in diameter and allow the casing to begin at the top of the ground, a protection against surface water. This pump is especially adapted to deep wells. It pumps quite easily, throwing a constant stream, and has a windmill head. All of these pumps have glass valve seat, and either brass or porcelain-lined cylinders. This company exhibited several other varieties of pumps. All their pumps are made of metal, and are neat, smooth and strong.

Comstock & Coonse, Indianapolis, Ind., exhibited several varieties of pumps. Their wooden suction pumps have porcelain cylinders and are made of the best selected yellow poplar. These pumps are worked with great ease, and raise water with great uniformity and speed. The porcelain is sufficiently down in the well to guard against freezing.

Rubber Bucket Chain Pumps. These are well and substantially made and handsomely finished. They have galvanized chains and rubber buttons.

The Coonse Reservoir Force Pump is a new invention, simple in construction, powerful in action, easily worked, and non-freezing. This pump is a good fire protection, and well adapted to farm and garden purposes. It is adapted to wells of any depth and can be used on wood or iron tubing.

The Merrill Pump Company, Indianapolis, Ind., exhibited one of their "Fountain Spray Chain Pumps." This pump is certainly worthy of a careful study and scientific analysis. In construction it is a chain pump with rubber buckets, and is so arranged that all the waste water returns into the well, or rather is "sprayed" into the well. Upon high authority it is claimed that this "sprayer" attachment is a preventive of disease and a promoter of health. By its use oxygen, or pure air, is introduced into the well or cistern and takes the place of noxious gases. A chemical analysis of water taken from wells in which this pump was used has resulted in a uniform verdict of a perfectly pure water. The pump is so constructed that by a series of rubber buckets, together with the spray attachment, the oxygen is carried down into the well or cistern to counteract the bad effects of offensive gases. This company also exhibited a general line of *Wood, Iron, Pitcher, Force and Driven Well Pumps*, all of which are modern in structure and supposed to be abreast of the times.

R. R. Rouse, Indianapolis, Ind., exhibited a full line of driven well fixtures and supplies, and if his exhibit left out anything in this line the committee could not "study up" what it was.

The Marseilles Manufacturing Company, Marseilles, Ill., exhibited some pumps that "look all right." The committee failed to find any one authorized to give details.

C. C. Wolfe, Rochester, Ind., exhibited a display of force pumps, which embody the essential features of a good force pump. It is easily worked, strong and neatly built. It is adapted to wells of any depth.

C. E. Thornton, Indianapolis, Ind., exhibited one of Hawk's Patent Force Pumps, which in a general way meets the reasonable demands of the thoughtful. In some respects it has very excellent qualities. It forces water "with a vengeance."

SPECIAL MERITS

—OF—

EXHIBITS IN BOOKS B, C AND G.

Examined by

SAMUEL J. TOMLINSON.

LAUNDRY AND DAIRY MACHINES.

J. C. Moody, Lynn, Ind., exhibited the "Champion Churn," It has a governor to regulate the speed of the machine. It runs by means of a steel spring. After this spring is wound up the churn runs automatically. It churns with a dashboard and is easily stopped.

The Dairy Implement Co., Bellows Falls, Vt., exhibited a creamery. This creamery has round cans with a funnel-shaped bottom for running out sediment. The refrigerator tank is constructed with dead air spaces. This tank can be placed in the derrick of a wind mill and the milk will not freeze in very low temperature, which is a great advantage. It claims to be the only creamery in which a lady can take the cream out, by a very simple device. It has a refrigerator for storing butter, cream, meat, bread, etc. It has perfect ventilation by a perforated dome in the cover of the can and a slot in each end of the refrigerator cover by means of which a draft is obtained.

The same company exhibited two kinds of family butter workers to be used on any kitchen table. One has an adjustable roll to give heavy pressure upon the butter, and it reduces the time of working the butter to five minutes. Also the Davis Swing Churn. It is hung like a pendulum, and the weight of the cream assists in the churning. It churns as quick as any churn in the market, and has no inside paddles or fixtures. Also the Nessbit Butter Press. It is very simple and efficient. It will press fifty pounds of butter an hour and leave it in beautiful cakes.

John Wilhelm, Wooster, Wayne County, Ohio, exhibited a creamery can. This can claims all the points embodied in the refrigerator creamery. It seals up tight and yet ventilates. The cans hold from two and one-half to five gallons. The cover, or top, has its edges in the water and the milk is hermetically sealed from dust, etc. The animal heat is condensed on the top of the can and is drained into the water.

The same person exhibited the Favorite Revolving Churn. This churn is a small barrel, which revolves by a crank. It has a simple device for fastening the lid on. This fastening is adjustable to regulate the bearing of the fastenings.

The Flint Cabinet Creamery Company, Flint, Mich., exhibited Wilson's Cabinet Creamery. It has a can only five inches through and exposes fifty-two inches of covering surface. The ventilation goes all the way around the cover, and the sweat shed condenses the steam and throws it into the water. In drawing off the milk the cream line is seen long before the cream reaches the bottom, and there is no loss. It has a water conveyer under the bottom of each can, with connections made especially for windmill attachment. The sink is easily cleaned without taking the cans out. There is ventilation on both ends of the cabinet.

Also, Wilson's Barrel Churn. The head is fastened by a lever and is screwed down so tight that the can can not leak. All the head gear and all the hoops are galvanized. The churn is finished as well on the inside as on the outside. Its fastenings are very secure. The rim head is sloping so the churn has a perfect drainage.

Also, Wilson's Improved Rim Strainer. The screen is in a vertical position, the milk falls on a solid bottom and the dirt is not forced through. A cloth can be put on and thereby make a double strainer.

Also, a lever butter worker. It has detachable legs, similar to stove legs.

The Acme Manufacturing Company, Kalamazoo, Mich., exhibited the "Acme Cabinet Creamery and Butter Cooler." It claims a better protected water tank than any other creamery, so that when opened the water tank is protected, thus holding the temperature. The butter cooler can be opened without opening the creamery. It is claimed that the water will not freeze, and it receives and wastes water at either end.

M. T. Rice, Brightwood, Ind., exhibited the "Sweepstakes Washer." It washes by expansion in boiling water, and consequently there is little wear on the goods. The clothes are agitated by pins.

Also, the Parkhurst Wringer. It is set by a ratchet and can be regulated by a lever while in motion.

J. B. Pettit, Burlington, Iowa, exhibited the Pettit Magic Washer. It consists of a set of inverted cups attached to a lever and worked in a revolving tub. Its action turns the clothing in the tub. It claims to wash quicker than any other machine, and without any friction upon the clothes. It is simple in construction, will remain in order, and is not expensive. It is also constructed with power attachment for laundries.

H. A. Stumph, Indianapolis, Ind., exhibited the "Acme Steam Washer." It washes with steam and hot water, and is worked by a crank. It claims a saving of soap, water and wood. The clothes are boiled and washed at one time. It uses no washboard and is easily worked.

H. T. Conde, Indianapolis, Ind., exhibited "Bent Wood Churns." The box of this churn is all in one piece and a perforated dashboard is revolved by a crank.

There being no square corners in the churn it makes a good butter box and is easily cleaned.

Jesse S. Wilhite, Indianapolis, Ind., exhibited the Babbitt Churn. It operates by a crank, and churns by a revolving paddle. The dasher produces a whirling and boiling motion of the cream. On this account it will churn easily and quickly. There is no metalic substance inside the box.

Mount, Roots & Co., Connersville, Ind., exhibited the Farmers' Friend Churn. It works with a crank and a power attachment, and is adjustable to any dasher churn. It churns quick and easy, and is durable.

C. D. Shellaberger, Indianapolis, Ind., exhibited a fence machine. This machine is for manufacturing wire and picket fence. It distances the slats, measures the fence and weaves in a brace wire. Any sized wire or any sized picket can be used. The capacity of the machine is two hundred rods per day. The brace prevents sagging and consequent rottening of the ends of the slats.

E. Over & Co., Indianapolis, Ind., exhibited the Eagle Wagon Bolster Spring. It is placed on a wagon under the bed to relieve the jarring of the load. It is a single bar of steel with a double bend, giving it the form of an ox yoke. When the wagon is lightly loaded, the weight rests on the extreme end of the spring, but as the weight increases, the ends are depressed, which causes the center of the spring to rise, thus graduating its strength to the increasing load. When over-loaded it forms a third bearing in the center. There is no strain on the bolster standards.

The same party exhibited the Hamilton Boss Wagon Trucks and wagon. These trucks are low and convenient on a farm for hauling fodder or farm implements. It is also used as a dray.

H. McCoy, Indianapolis, Ind., exhibited the Perfection single, double and tripletrees and Neckyoke. Each clip has two spurs which are forced into the wood and it is firmly held by a bolt and a nut. If the wood should break the clips can be taken from the old and placed on the new wood without going to a blacksmith shop. The clips are applied to the wood, cold and there is no likelihood of their becoming loose. The clips entirely surround the wood where applied, thus adding to its strength. They claim strength, durability, neatness and cheapness. The wood is hickory and the iron is malleable.

The Flint and Walling Manufacturing Co., Kendallville, Ind., exhibited the Star Wind Engine. For it is claimed the best balanced wheel in the market. The little finger will turn it. The mill is self-regulating, double-acting and storm-proof. It has an automatic break which is adjustable, and its stroke is direct action. It is noiseless, strong, durable and very light running.

R. N. Crosby, Indianapolis, Ind., exhibited the Storm King Wind Engine. It is a direct automatic engine. In a storm the sail opens out edgewise and will not run. It runs light, is cheap, and its construction is very simple.

Mast, Foos & Co., Springfield, Ohio, exhibited the Iron Turbine Wind Engine. It is all made of iron, the wheel being wrought iron. The buckets are so constructed as to catch more power than a straight fan. Superiority in the simplicity of working is claimed. The pressure is regulated from the front, turning the wheel edgewise to the wind. The main bearings are adjustable so that all wear and lost motion can be taken up without removing the box. It is supplied with self-oilers, which prevent the necessity of frequent visits of the owner.

The same company exhibited the Buckeye Pump. This pump is all made of iron and is a double-acting force pump. It is very useful for families in forcing water into buildings or forcing water in case of a fire. It is also useful in washing vehicles and for other purposes where a hose is needed. The cylinder is porcelain-lined and can not corrode nor rot. The check-valve works on a brass valve seat which can not corrode and is more durable than iron. The pump is hung to the cylinder with double pipes, one on each side of the cylinder, which support the pump so that the weight of the pipes below hang perfectly square on the cylinder. This method prevents side-twisting in the joint which exists where the cylinder is set on one side.

Also, the Buckeye Iron Fence Rail in "J" shape. This makes it very stiff up and down. The picket is fastened by a notch and is all closely bound together. It is all of wrought iron with the exception of the ornaments. The panels are only five feet long, and have a slot at the end of each rail for expansion and contraction. This company manufactures twenty-five different styles of this fence.

Also, the Buckeye Lawn Mower. It is simple, durable and acts easily. It is easily adjusted and sharpened.

Also, the Buckeye Hose Reel and Sprinkler. This is novel in its construction. It is durable and useful, answering both for a hose and lawn sprinkler.

The Challenge Wind-Mill and Feed-Mill Company, Batavia, Ill., exhibited the Challenge Wind-Mill, which claims to be the only double-header wind-mill, and it retains its position at right angles to the wind under all circumstances, making the entire surface of the wheel available for power. The principle of governing is such that after the wind is sufficient to give it the desired speed no increase of wind will accelerate the speed of the mill, thus at all times maintaining uniformity of speed. It is durable; endures storms without danger of injury. This mill has been in successful operation for seventeen years. All sizes, from a mill sufficient to pump water from a well to seventy-horse power, are manufactured by this company.

Sowers & Hayworth, Covington, Ohio, exhibited the "Van Horn Fence Machine." This machine is for manufacturing wire and slat fence. For it is claimed greater tension than any other fence machine possesses. It produces the same tension on both wires alike, and makes an even twist. It will manufacture thirty rods an hour.

W. H. Boggs, Covington, Miami County, Ohio, exhibited a postless portable farm fence. It is supported by an adjustable lock-brace at each joint. This brace is fastened in the ground by stakes. The fence is made of either boards, pickets, rails or wire.

The Hanika Iron Fence Company, Springfield, Ohio, exhibited an automatic farm gate. It is very simple, works by a lever and a wire; is unimpaired by snow or ice, which is an important feature, and has an automatic latch. The same establishment exhibited the Hanika iron fence. The method of connecting the panels makes it adjustable to temperature. No bolts are used in putting it together. The ornaments show the same from both sides. The fence is equally balanced, the material being in the center of gravity.

Gere, Truman, Platt & Co., Owego, N. Y., exhibited a device for avoiding the side-lash of a wagon-pole on uneven ground. This is accomplished by having a flexible wheel on a standard. The spindle and standard are together and turn. There is also a coil-wire spring on the bolster, which on uneven surfaces relieves the strain on the axle and wagon. If the wheel strikes a stump, it does not side-lash. There is no weight on the axle in the center, the bearings all being on the upright spindle. Both axles are parallel. The spokes in the hub of this wheel are bevel-shouldered.

Bimel & Son, St. Mary's, Ohio, exhibited a farm wagon. It is self-oiling. The oil is put in the end of the hub without taking the wheel off. No dirt can get on the spindle to cut it. There is a fan shied on the axle to prevent the dirt from entering the hub on the inside. The box is concave in the center so as to hold the oil. This throws the bearing all on the point and behind.

The David Bradley Manufacturing Co., Indianapolis, Ind., exhibited the "Weber wagon." The wheels are made of the best seasoned timber and boiled in oil before they are put on and painted. The ironing is of the best quality. The seats and ends of the bed are all champered. This is in all respects a good farm wagon.

The same company exhibited a farm spring wagon. It is all clear timber in the wheel and it has the best of iron. It is nicely painted and the trimming and finish are equal to any in the market.

The Moline Wagon Co., Moline, Ill., exhibited the Moline wagon. It is light-running on account of the construction of the axles and skeins and the way they are set. It is a general purpose farm wagon. The axles and wheels are soaked in oil before the paint is put on, thus avoiding loose tires. The tires are set by a patent process. The wheels and all parts of the wagon are interchangeable.

The Hoosier Drill Co., Richmond, Ind., exhibited the Hoosier fence machine. It can be operated by one or two men. The tension for every wire is perfectly under the operator's control. It makes a continuous twist. The slats are regulated to any width desired. The slats are always perpendicular.

Kregelo, Railback & Hiner, Indianapolis, Ind., exhibited the Fultz upright field and house wire fence maker. It is combined and can manufacture the fence in a roll or in the field with equal rapidity and as fast as any machine can make it in a roll. Every wire reel reverses and makes a brace on the slat each way. The rolls are solid and do not squeak and get out of shape. It makes the fencing to fit the ground. The tops of the slats are always even. It will make from eighty to one hundred rods per day. They also manufacture a nice iron fence at an expense of fifteen cents per foot.

The Snyder Wagon Co., Auburn, Ind., exhibited the Snyder wagon. It has a self-oiling skein. It is oiled from the top and on the inside. It has a double brace on both axles near the skein. The manufactory is located in the heart of the timber country. Selected timber is used in the wagons, as the proprietors have first choice of timber.

Thomas Huston, Kokomo, Ind., exhibited a wire and rail fence. The posts are driven or set in the ground, then the rails are fastened up in a straight line with wire by a simple and cheap wire stretcher. The wire is woven between the rails from top to bottom. This wire stretcher only costs one dollar, consequently is within the reach of all.

Ewer & White, Battle Creek, Mich., exhibited Ewer's patent portable farm fence. It is made of wood at the bottom and two strands of wire at the top, thus making a hog fence at the bottom and a horse fence at the top. It is in panels four feet long, connected by a coupler and is supported by an iron post. The fence is elastic and when the top is pushed over, the fence will come to an upright position. Two men can remove one-half mile in a day.

The Cook Automatic Gate Co., Indianapolis, Ind., exhibited the Cook automatic gate. It has a yielding device to prevent the wheel of a vehicle from striking the trap solid. It has a central application of power, thus raising the rods up out of the snow or slush. It has a spring hand-lever by which the gate may easily be unlatched by one on horseback. The gate opens either way. The latch is so constructed that it is impossible for the gate to pass when not desired.

The Wayne Agricultural Co., Richmond, Ind., exhibited the Champion fence machine. It weaves the fence as it is put up, or a line can be put up one hundred rods long and then the slats put in. It goes over depressions and hills with a continuous wire. There is no necessity of filling or blocking up, but the fence follows the wire wherever it goes. The pickets stand plumb at all places. It can be worked by one or two men. The fence can be made from three feet to six feet high. As many strands as desired can be put in, but the company recommend three double strands. Pickets from one-half an inch to twelve inches wide of any kind of timber can be woven. It has an extra leverage. It is never necessary to cut the wire in putting up a fence.

Bremerman & Craft, Indianapolis, Ind., exhibited the Bremerman combined wire and picket fence machine. It is simple, plain and cheap machinery. A farmer can make thirty or forty rods in a day with one helper. The picket is grooved and a heavy wire fits in the groove, consequently the fence is solid and firm. A picket can not be removed from its place. Any kind of a picket can be woven, high or low, square, round or flat. The wire is not twisted.

Kiler Bros., Indianapolis, Ind., exhibited adjustable iron fence posts. They are adapted to all kinds of fencing, as wood, wire, etc. The post is driven in the ground and can be adjusted to any desired angle.

C. Wright & Son, Dayton, Ohio, exhibited the Gem City fence loom. This is claimed to be the simplest machine in use. It weaves the fence without respooling the wire. It measures the fence as it is manufactured. A boy fourteen years old can operate it with ease. It can be sold as reasonable as any other fence machine.

Norman Knaub, Hazleton, Ind., exhibited Knaub's patent combined portable fence of wood and wire. It sets on the top of the ground. It is coupled by a link and wedge and supported by a wire stay brace. It has a transverse foot with a notch in which the panels rest. It can be made either of plain or barbed wire. It is so constructed that it springs back to its place when pressed against. It can be made for sixty cents per rod.

M. C. Henley, Richmond, Ind., exhibited the Henley Monarch fence machine. It uses a large wire and a heavy picket. It is portable, adjustable to hills and keeps the pickets plumb. It uses a continuous wire. The picket is beaten up into the wires, making the fence firm. Any width slat can be used.

Dr. James Bryant, Indianapolis, Ind., exhibited a combined iron and wood fence. It has a galvanized iron rail and the pickets are put on and clinched so they can not be pulled off. On the wire fence the wires are clinched in the center of the rail. The fence is also made in one pattern of barbed wire for chickens and dogs.

The same party also exhibited an iron post with an anchor fastened by a bolt. A post six inches in the ground and fastened in this manner is very secure. The lower end of the post is sheathed by galvanized iron filled at the bottom with a composition as durable as stone. Also, a portable fence, made in the same manner as the combined iron and wood fence already described, with the rail bolted at any distance. A section can be taken out with a screw-driver any place.

The Winchester Wire and Iron Works, Winchester, Ind., exhibited wire and gas-pipe fencing, farm and yard gates. They are strong, neat and durable, and can not blow down, and are not easily washed away. The direct breaking strain of the wire is as follows: No. 8 wire, 2,800 pounds; No. 9 wire, 2,600 pounds. A forty-nine inch fence consists of two No. 8 wires, which will withstand 2,800 pounds each. The fence is made of the best galvanized steel wire and will not rust or corrode. The wires diverge in six directions from the twist. Also a gas-pipe fence, with sections of any desired length, by weaving a network of wire on galvanized wrought-iron pipes. This may be made plain or with an ornamental top. Also, both farm and yard gates, made in the same manner as the gas-pipe fence, except that heavier wire is used in the farm gates. These gates are beautiful and do not sag the posts.

Jonathan Hughes, Waynetown, Ind., exhibited the Champion gate. It is opened by a rope and lever. It is opened from either side or at the latch. It works light and easy and makes a perfect lock when shut.

Cal. F. Darnell and J. B. Cleaveland, Indianapolis, Ind., exhibited Cleaveland's tubular iron fence and post. The post is driven in the ground and braced very firmly, so it can not be pulled over. A bolt goes through the post and the wire goes through the bolt. The wire is easily tightened. The wire can be loosed in the fall of the year so that it will unwind enough to prevent breaking by contraction. Stays go on every four feet and the posts can be placed a long distance apart.

B. F. Grandstaff & Bro., Peru, Ind., exhibited the Solid Comfort Gate. It has no post, no latch and no hinge. It stands, swings and opens. It is worked by a trap, and the gate is in two sections and each is balanced by a weight. Each section is tilted back. It can not be blocked by snow or ice. Either arch will open or close it. It locks automatically and opens easily.

They also exhibited the Butler Tubular Iron Fence Post. The spear is of wrought iron, to prevent rust. The staff is of gas pipe, with a hole for tying the wire. It has a patent stay which acts as a spacer. The stay rod is solid and firm and is tied on the same as the wire is tied to the post.

E. C. Moore, Webster, Iowa, exhibited the Universal Gate. It is gotten up on a centre and balance slide draft. It can not sag, and claims to employ the lightest running principle in use. It is operated by levers.

Also, a stock gate, which works without levers. It can be worked from any part of the gate. It is safe, being a self-locker.

Also, a yard gate, which works on the same principle as the above.

Wm. Cokayne, Giddingsville, Clinton Co., Ind., exhibited the Cokayne Straight Rail Fence. It is claimed to be cheap, strong and durable. It sets on top of the ground, the rails being clamped by two posts which are fastened by wire. It has a barbed wire on top.

Wm. Shultz, Laporte, Ind., exhibited the Shultz Farm Gate. This is a swinging gate and works by a rope and lever, from either side. It works easily and has a lever lock latch.

Dr. Atkinson, Indianapolis, Ind., exhibited the Eureka Automatic Hinge. This hinge is protected from rain and snow. It was the only hinge exhibited on the ground.

MILL MACHINERY AND MILL APPLIANCES.

C. E. Merrifield, Indianapolis, Ind., exhibited a Seed Cleaner. It claims to separate four different grades of seed at one time—as the largest grains and smallest grains of wheat, cheat and timothy. It is simple, and only costs a small amount.

The Newark Machine Company, Columbus, Ohio, exhibited the Monarch Fanning Mill, Grain Separator and Bagger. It sacks the grain by the motion of the shoe into sacks, which are attached. It has a device for separating and grading seeds, giving the prime grains for seed wheat, and at the same time leaving the small grains for market. It has a elevator tail-board which is pivoted and can be adjusted to any angle desired, so as to suit the top screens, which close the rear end of the shoe and prevent the light grains from being blown out with the chaff.

Also, a warehouse mill, which is adapted to cleaning wheat and all kinds of grass seeds, and also for grading wheat. It is provided with an equalizer in the shoe, which changes from an outward direction to an upward one, thus lifting the chaff and white caps from the sieves and preventing them from clogging. This mill is provided with an eccentric, which can be changed to give a long or a short shake of the shoe.

The Barnard & Leas Manufacturing Co., Moline, Ill., exhibited the Victor Corn Sheller and Cleaner. It does the shelling down under the dump, and the corn and cobs are elevated to a separator. All the shelling surfaces are chilled. It has an adjustable center feeder which can be run either way.

The same company exhibited the Dustless Corn Cleaner. It is provided with a shaker and the corn is spread in thin sheets and the wind has access to it.

Also, a combined sheller and cleaner.

Also, a centrifugal reel flour bolter. It bolts the entire surface of the cloth, and is of very light draft.

P. P. Mast & Co., Springfield, Ohio, exhibited a combination truck and bag holder, which holds the bag in and upright position on a truck.

H. T. Conde, Indianapolis, Ind., exhibited the Keystone Pony Sheller. It is light-running, very clean and simple.

He also exhibited the Favorite Washer. It washes by half rollers, giving the same friction as a washboard, and has a swinging motion.

The Nordyke & Marmon Co., Indianapolis, Ind., exhibited an eighteen-inch plantation mill with a bolting arrangement attached. This mill is for making meal. Also, one plantation mill for feed grinding. Also, one twenty-two-inch under-runner, for corn grinding. Also, one four-roller mill for gradual reduction, or new process milling. Also, one double set of seven by eight-inch rollers for new process milling. Also, the Kumler emery wheel for grinding chill rolls in water, thus preventing chattering. It claims durability and fast cutting.

George T. Smith, Jackson, Mich., exhibited a middlings purifier. No. 1 has a dust collector attachment. The same party exhibited the Centrifugal Reel and Scalper. It has great capacity and runs light, using only an inch belt for power.

ROAD MACHINERY AND STUMP-PULLERS.

E. Over, Indianapolis, Ind., exhibited the Davis patent stump-puller. It is operated by a lever and a chain. It is simple, strong, durable and of immense power. Twelve pounds at the end of the lever will raise two thousand pounds. Two men will raise a stump requiring twenty or thirty thousand pounds of power. It is warranted not to break. Also, common malleable farm bells. Also, a potato digger. It has a shield which runs under the potatoes and throws them out on the ground where they can be seen and dried. It separates them from the earth.

Pennock & Sons Co., Kennett Square, Penn., exhibited the Victor Reversible Road Worker. It has superior adjustability by double giant levers. The operator stands over the machine. It is the simplest reversible machine made. It is easy to secure the proper angles for grading, leveling, and drifting earth. It is very strong and particularly adapted to working hilly roads. Also, the improved Pennock Road-worker. This, also, has giant leverage, and is adapted to general work in a level or slightly rolling country. In the last year it has been improved by the addition of spuds, steel spindles and giant levers. The same company also exhibited the New Daisy Road-worker. This is a two-wheel machine. Its advantages over other two-wheel machines are the adaptation of the plow, it having a beam by which the team is hitched directly to the scraper-bar, the tongue not being attached to the bar as in other machines, thus relieving the horses' necks of the jarring motion. It is also an all-steel, concave scraper, and will give the earth a rolling motion. The position of the operator is in sight of the earth and over the machine.

STOVES, RANGES, ETC.

The Michigan Stove Company, Detroit, Mich., exhibited twenty-five stoves, comprising hard and soft coal base burners, soft coal cook stoves, hard coal cook stoves, wood cook stoves, coal and wood ranges, wood base heaters, sheet and cast iron direct draft heaters. This was a superior display and the goods were all first-class. The iron used is the best, and the fitting and mounting of the stoves is claimed to be perfectly done. This company is in the advance in constructing stoves that embody all good points. They manufacture a line of six hundred varieties of styles. Every stove is named "Garland."

The Ormsby Sash Holder Company, Boston, Mass., exhibited a window frame and balance attachment. The sash is hung on the principle of window shades, being raised and lowered by a spring. It takes the place of weights and dispenses with weight frames. It is very convenient where the studs are too close to the window to admit weights. All fixtures are warranted. It is easily placed, easily removed for repairs, and can be applied to old houses where weights and pulleys can not be used. It is also adapted to bay windows. The tension of the spring is easily regulated, and these springs are much cheaper than weights.

Bailey & Edwards, Chicago, Ill., exhibited an oil burning stove. The oil is led into the fire box by a pipe, and striking a retort, is vaporized, and the carbon from the oil and oxygen make gas equal to the natural gas of Pittsburg. This stove is now in use. Its fuel costs about the same as wood or coal. It claims convenience, there being no smoke or ashes. It is heating an engine of three hundred and eighty horse power in Chicago.

Eckert & Co., Indianapolis, Ind., exhibited the Eureka Furnace. It will burn any kind of coal, Brazil slack, hard or soft, or coke. It claims to consume all the smoke and gases. It is made in four styles. In the school house heater it is a perfect ventilator, having a duct to take out the foul gases. With Brazil slack coal at $1.50 per ton it is claimed it will heat an eight-room house at a cost equal to the cost of running one base burner. The draft is taken in at the top, and the cold air is held down on the coal till it is consumed. The magazine is double.

John Henderson, Indianapolis, Ind., exhibited the Bredoman One Man Saw. It is a cross-cut saw attached to a wooden frame, intended to be used by one man. It works easily, and it is claimed that a boy ten years of age can run it. It is light and portable.

Thomas W. Bass & Son, Indianapolis, Ind., exhibited two varieties of brooms. One a good house broom, which is a good serviceable article. The other is a carpet broom.

Valentine Foland, Indianapolis, Ind., exhibited Foland's Combined Reciprocating Traversing Machine. It is used for hand-planing. It is run easily by one man. It will plane, cut tenons, cut gains and mitres, and will make a square cut or any desired angle.

The American Paper Pulley Co., Indianapolis, Ind., exhibited paper pulleys and paper friction wheels. It is claimed that these pulleys will do twenty-five per cent more work than any other pulley with the same tension of the belt. It can be used successfully with a looser belt than any other pulley. It is not easily broken. They are claimed to be from fourteen to fifty per cent. lighter than cast pulleys. The committee saw it tested with a steel pulley and it exhibited three times as great cohesion as the steel article.

Clash & Ewing, New Albany, Ind., exhibited the Simplicity Weather Strip. It is a galvanized iron strip to prevent the rain, wind, insects and dust from entering a house. It is durable, simple and cheap.

P. P. Mast & Co., Springfield, O., exhibited the Buckeye Senior Cider Mill. It has an adjustable throat for crushing small or large apples. The shape of the rollers is such that the pumice is thoroughly crushed. The frame is very strong. The parts are all interchangeable. The screw is of the latest improved pattern giving the greatest pressure with the least power. It is fitted with curbs. It is easily taken apart and is manufactured in two sizes.

The Munson Lightning Rod Co., Indianapolis, Ind., exhibited Munson's Lightning Rods. There are two sharp edges and on every rod a dispenser. At every joint there is a point. It presents an inside and outside surface and by the flange being open on one side, it admits moisture and retains it at all times and at the same time allows room for the moisture to evaporate. Each core is coated with a substance which prevents oxidation and is a perfect insulator. The core intersects the section, thus breaking the joint.

Also, Munson's Square and Angular Wire Cable. This is composed of square wires, four or more in a strand. They are twisted together, then six or more strands are twisted together. They are continuous in pieces of five hundred and one thousand feet.

Also, a square copper tube put together without dowel-joint. Also, cardinal points, iron braces, glass balls, metal balls, and æsthetic vanes of all descriptions, all in copper.

August Diener, Indianapolis, Ind., exhibited eight pieces of monumental work embracing a general variety of marble and granite monuments. He claims to do a superior class of work. All the marble is home work.

H. C. Fox, New York, exhibited the Fox Sad Iron. It is a combined smoothing iron, fluter and polisher. It is heated by a spirit lamp and when one side is cold the other is hot, so that it can be used continuously.

The Machine and Steel Pulley Co., Indianapolis, Ind., exhibited the Perfection roller skate and the Perfection floor grinder. The grinder is to smooth the floor of a rink. It consists of a grindstone making two hundred revolutions a minute.

The skate has two rubbers and consequently always has a line action. It also embodies the entire friction principle by two brass collars inserted and the space fitted with steel rolls. They are manufactured with wood and metal bottoms.

The Chicago Scale Co., Chicago, Ill.. exhibited a four-ton, double-beam stock scale. Its construction is claimed to be the simplest of any scale made. It also claims to be the cheapest scale in the market and equally as good as the best. Only English steel is used. There are four levers, and no pit is required.

The same company also exhibited several portable scales and counter scales. Also, a Post Office scale. It has a triple combination beam. The beam has three markers upon it, for letters, papers and merchandise, showing the postage in cents. One side is marked in ounces and pounds, and the scale weighs accurately from one-fourth of an ounce to twenty-five pounds.

The Sheet Iron Bellows Co., Kempton, Ind., exhibited a sheet iron bellows. It occupies a small space, is durable and easily worked. It is composed of two sheet iron cans which are inverted and work in circular chambers which are packed in liquid fluid preventing any escape of air. It is noiseless.

Jesse T. Johnson, Indianapolis, Ind., exhibited a machine for mending buggy wheels. It puts in a new spoke or mends one which is broken without removing the tire. It tightens wagon wheels or puts in new sections in the rim without removing the tire. It raises the rim by a screw and ratchet, and inserts a hard leather washer on the shoulder of the spoke. It mends the spoke when broken off at the end by inserting the socket. It works easily and perfectly. It also draws an old spoke out of the hub and puts in a new spoke. It claims to do more work on a wheel in a given time than any man can do without it.

Raymond & Price, Dayton, Ohio, exhibited Raymond's Wrought-Iron Tempering Wheel. It being of wrought iron, it is not subject to the weather. In tempering it runs on the bottom of the pit. It does not throw mud out like a dished wheel. It is very light draft. It lets the mud all drop between the rims and the spokes. It is also indestructible.

Also a brick barrow, a spring barrow for pressed brick and off-bearing trucks.

Also, machine and hand brick moulds.

Also, a kiln front door.

The David Bradley Manufacturing Company, Indianapolis, Ind., exhibited the Buckeye Cider Mill.

Also, a road-scraper, with wood sides and back and steel bottom.

J. H. Hartwell, Springfield, Ohio, exhibited the Iron Grasp Cement. It is used for cementing any article, as bone, stone or ivory. It is not affected by hot weather.

Also, a quasha cup, made from wood obtained in South America. This wood contains medical properties. It is specifically good for sick headache, dyspepsia and billious attacks.

The Ready Fire Extinguisher Company, Chicago, Ill., exhibited the Ready Fire Extinguisher. It consists of a cylinder eighteen inches long. It holds one quart and a gill of liquid. It claims quick access to the chemicals in case of fire. It will not evaporate or freeze.

SPECIAL MERITS

—OF—

EXHIBITS IN BOOK "D."

Examined by

PROF. RYLAND T. BROWN.

J. I. Case, Racine, Wis., exhibited one wood-beam, steel, breaking-plow, 12 inches cut, draft regulated by an iron strap under the beam; one stubble plow, 14 inches cut, steel complete except the handles; one center-draft stubble plow, 14 inches cut, steel beam; one center-draft general-purpose plow with a steel beam, 13 inches cut; a one-horse corn plow, 8 inches cut, all steel except the handles; one chilled iron plow, highly polished, 13 inches cut, jointer and gauge-wheel attached, wood frame; and one sulky plow, 14 inches cut, plow and frame with wheels steel throughout. This is a left-hand plow managed by a right-hand lever. This lot of plows covered every demand, from sod or stubble breaking to corn cultivation. The material was well selected and the work well executed.

Deere & Co., Moline, Ill., exhibited a group of plows, to-wit: Gilpin's sulky plow, 14 inches cut, steel share and mould, single lever, wheels so adjusted that the plow is always level; also a wheeled walking plow on the sulky principle, single lever serving as a handle, 13 inches cut; also a double walking sulky, consisting of two 12 inches cut plows managed by a single lever; also one steel-beam, general-purpose plow, 14 inches cut, and the same with a wooden beam; also two double-shovel plows, one with an iron beam and one a wooden beam. These plows, share and mould, were all either of steel or chilled iron, highly polished, and the workmanship was first-class.

Bucher, Gibbs & Co., Canton, Ohio, had on exhibition a collection of fifteen plows, consisting of one, two and three-horse plows, ranging from 8 to 14 inches cut. The working parts of these plows were either steel or chilled iron. The moulds, shares, beams and handles are interchangeable on plows of the same grade, and either of these parts may be supplied by order from the factory. The plows are put together by screw-bolts. The collection constitutes a complete assortment of plows, except the sulky. The material is good and the work well executed.

South Bend Iron Works, South Bend, Ind., H. B. Dixon, Exhibitor, showed thirty-five plows, including sulkies, breaking plows of all grades and adapted to all kinds of farm and road plowing. Wood and steel frames, steel and combination working parts, all interchangeable on plows of the same number. With the reputation of the South Bend plows, it is hardly necessary to say that these were all of good material and workmanship.

Dayton Plow Co., Dayton, Ohio, exhibited thirty plows, one sulky and twenty-nine hand plows. Of these, twenty-eight had the working parts made of highly tempered steel, polished; and one was a combination of steel and chilled iron. In the collection there were three plows of fourteen inches cut, designed for three horses, and four intermediates, for two or three horses, thirteen inches cut; seventeen were two-horse plows, twelve inches cut; three were one-horse plows, nine inches cut; and two shovel plows, one a single shovel and one double. This collection comprised almost every pattern of plow in use, all well proportioned and of good workmanship. Where the beams were not of steel, the draft was direct from the working parts by a rod under the beam. The sulky plow had a steel frame and wheels, the draft directly attached to the working parts of the plow, which were hung on a swivel-joint, allowing free motion to the plow.

The David Bradley Manufacturing Co., Indianapolis, Ind., exhibited a swinging beam sulky plow. It is a general purpose plow, fourteen inches cut. The frame is entirely of steel as is also the working parts of the plow. These are attached by a swivel-joint. The wheels are dissectable, allowing the replacement of any part at will.

Also, three steel plows, twelve, fourteen and sixteen-inches cut. The entire plows, except the handles, are steel, light and strong.

Also, two steel plows with wooden beams, adapted to general purpose work. They are twelve and fourteen inches cut; and two stubble plows of like dimensions, one with a steel beam.

Also, a single and double-shovel plow, both with wooden frames.

Also, a listing plow with a corn drill attached. The plow has a double share and mould, throwing the furrow on each side, covering the drill, and following it with a pressure wheel.

Also, a general assortment of one, two and three-horse plows, wood and steel beams with steel and combination, or steel shares and mould, all of good material and excellent workmanship.

Wier Plow Co, Monmouth, Ill., with Branch House at Indianapolis, Ind., showed a three-wheeled sulky. The plow is lifted in its whole length with a lever, by which it is adjusted. The tongue is hinged, and the draft cleaves, working in a slot admits of direct turning. The working parts of the plow are steel.

Also, the Scotch Clipper, a two-wheeled sulky made of highly polished steel. The same adapted to breaking sod or prairie.

The same company exhibited an assortment of fifteen breaking plows, from twelve to fourteen inches cut, five of them made entirely of steel, except the handles, and ten with wooden beams and steel share and mould.

Also, the Indianapolis General Purpose Plow, with wooden frame and steel or combination share and mould, interchangeable; malleable iron standard; twelve inches cut.

This entire group of plows, exhibited by C. G. Root, of Indiannpolis, for the Wier Plow Company, are of high merit, being made of good material and of first-class workmanship.

E. E. Sickler, Indianapolis, Ind., exhibited a sulky plow of an odd pattern. It is two-wheeled, both wheels running in the furrow, one in the previous made furrow and the other following the plow. It is a 16-inch cut steel plow. Its chief merit is that its wheels run on solid ground. With it was exhibited an ingenious wire-stretcher, operating by a lever and open ratchet.

Rock Island Plow Co., Rock Island, Ill., exhibited eight breaking plows, 12 to 14 inches cut, working parts all steel or combination steel and chilled iron. A lot of well-made plows.

J. I. Case, Racine, Wis., exhibited one two-horse cultivator, wooden wheels, steel beam, draft direct from the axle. Also, two cultivators, same style, with steel wheels and spiral spring adjustment.

Deere & Co., Moline, Ill., showed a walking cultivator, the tongue attached by a swivel-joint. Axle jointed so as to make the wheels independent; draft direct from the axle at each wheel. Shovels relieved by spiral springs.

Also, Queen Tongueless Cultivator, same as above except tongue and springs.

Also, a combined riding and walking cultivator. Depth of plow regulated when riding by a foot lever, and when walking by a hand lever.

David Bradley Manufacturing Co., Indianapolis, Ind., exhibited a two-horse, combination cultivator (walking or riding), steel beam, shovels and shields adjustable to any distance from the corn.

Also, a steel frame two-horse cultivator, steel dissectable wheels, adapted to walking or riding.

Also, a wooden beam two-horse cultivator, with an adjustable arch, adapting it to corn of different sizes. Wheels arranged independently; each horse controls its own wheel.

Also, a cultivator same as above except that the axle is adjustable to corn rows different widths apart.

Also, an iron frame, wooden tongue, two-horse cultivator, rigid arch and adjustable axle.

Also, a two-horse, wooden beam cultivator, double steel arch, wheels either steel or cast iron.

Also, a five-shovel, one-horse, wooden frame cultivator.

Rock Island Plow Co., Rock Island, Ill., exhibited four two-horse cultivators. One riding and one walking tongued cultivator, wooden frame. Two tongueless cultivators. One of these is steel framed throughout, the other has a wooden frame.

Wier Plow Co., Monmouth, Ill., had on exhibition a combination riding or walking cultivator, with a tongue so balanced as to throw no weight on the horses; steel wheels and four steel shovels.

Also, a tongueless cultivator with steel or wooden beams, small steel wheels, spokes secured to the hub by screw bolts. No axle, draft independent.

Also, a five-shovel, one-horse cultivator, adjustable to any width of row. Straight or diamond-shaped shovels, reversible.

Rude Bros., Liberty, Ind., exhibited four two-horse cultivators. One tongueless, with an adjustable arch, and one with a double tongue. One double tongued with a rigid arch, and one single tongued; all with steel shovels. Material and workmanship good.

Also, a one-horse, five-shovel cultivator, adjustable.

Gere, Trueman & Pratt, Owego, N. Y., exhibited a spring-tooth cultivator. Spring teeth set obliquely right and left, covering a land of twenty-three inches.

Also, a one-horse cultivator with spring teeth and a guide-wheel in front adjusting the depth, and a sliding shoe in front of each tooth to crush clods. Teeth in both these made of tempered spring steel.

Also, the Perfection Cultivator, two-horse, adjustable, works with or without adjustable arch, axle on swivel so that the shovels are always in line.

Geo. W. Brown, Galesburg, Ill., exhibited a two-horse cultivator (walking), steel shovels, steel beam and frame. To secure lightness with strength, the steel of the frame was rolled with a cross-section in the shape of a double T.

Albion Manufacturing Co., Albion, Mich., showed a combined cultivator, spring-toothed harrow and seeder, with fifteen spring-steel, shovel-pointed teeth. The depth is regulated by a lever. Adapted to either riding or walking.

Marseilles Manufacturing Co., Marseilles, Ill., exhibited a riding corn cultivator, with a novelty draft—a double-tree on the tongue, from each end of which a chain descends to a pulley made of iron and attached to the axle; to each chain a horse is to be hitched. This was an effort to overcome the effect of the irregular movements of the team.

Also, a combined riding or walking cultivator—draft direct from the tongue.

Also, two walking cultivators, one of which has the chain and pulley draft as in the first-described cultivator. All have steel or wrought-iron frames.

Norris Bros., Rushville, Ind., exhibited a five-hoed one-horse cultivator, and also, a two-horse tongued cultivator, both of good material and workmanship.

P. P. Mast & Co., Springfield, Ohio, exhibited six cultivators—one wooden-framed riding, one combined riding and walking, iron-framed; three with tongues and springs to relieve the weight of tongue, one with spring beams without break-pins—all, except the first-named, have steel beams.

R. Lean, Mansfield, Ohio, had on exhibition a gang harrow of three sections, each attached to a draft bar independently; frames made of steel bars, rolled in a channeled form, to secure strength and lightness; twenty-four tempered steel teeth in each section.

The David Bradley Manufacturing Company, Indianapolis, showed three harrows—

1. A Scotch harrow in two sections, attached by hinges; wooden frames with forty steel teeth in each section.

2. Freedman's harrow. Two trianglar sections hinged together, forty steel teeth in each, made of half-inch bars.

3. A folding harrow in two sections, with five beams in each section. The sections are detachable, and may be used singly or doubly; forty steel teeth in each section.

Wier Plow Company, Monmouth, Ill., exhibited four harrows of different patterns.

1. A Scotch harrow; two square sections, with forty teeth made of five-eighths steel bar in each section.

2. A tri-sect harrow, loosely hinged; each of the three sections may be used singly. Each section has forty-five patent-head, steel teeth.

3. A square harrow; four sections; teeth reversible, either perpendicular, or inclined backward for cloddy ground. Twenty steel teeth in each section; may be used singly or in gang.

4. An iron harrow with four bars; teeth arranged ziz-zag. Twenty steel teeth in each of the four sections.

J. I. Case, Racine, Wis., exhibited a double section harrow, with fifty steel teeth in a section. The teeth are adjustable by a lever, may be set inclined backwards or forwards at any desired angle; teeth of five-eighths bar. Also Iron Duke harrow; iron frame in two sections; 48 steel teeth in each section adjustable to any angle.

Thomas Harrow Company, Geneva, N. Y., had on exhibition a Scotch gang harrow, with pulverizer attached. The harrow consists of three sections, with thirty-six steel triangular teeth in wooden bars. The sections are detachable, and may be used singly. The pulverizer has knife-edged teeth inclined backward. It precedes the harrow, or may be detached from it.

A. C. Evans, Springfield, Ohio, exhibited a tripple harrow, hinged loosely; folding; forty-five steel teeth in each section, adjustable to any desired angle.

The David Bradley Manufacturing Company, Indianapolis, had on exhibition a field roller, six feet long, in two sections, on an iron axle; roller twenty-two inches in diameter, made of wood; weight box on the top.

Deere, Mansur & Co., Moline, Ill., exhibited two check-row corn-planters and a one-horse corn-drill; all of good material and workmanship.

Beedle & Kelly Co., Troy, Ohio, exhibited two corn-planters, one of which is a combined planter and drill, a one-horse corn-drill and two with check-row attachments. All rotary drop arrangement; glass windows in spout; depth adjusted by lever. Seats adjustable.

Challenge Corn-Planter Co., Grand Haven, Mich., exhibited the Challenge Cornplanter. It has a revolving drop—simple—no rollers, cams, springs, and but little friction. Wrought-iron axle. A force-lever regulates the depth of planting. Either a flexible check-row or a hand-drop. Exhibited by W. C. Sheldon.

A. C. Evans, Springfield, Ohio, exhibited a corn-planter and drill combined. Double-row. Hand-dropper.

George W. Brown, Galesburg, Ill., showed a check-row corn-planter. A rotary drop worked by a lever without gearing.

Also, a corn-drill adjustable to spaces from ten to twenty inches between the grains.

Norris Bros., Rushville, Ind., showed Harbin's Prairie Queen Corn-drill. Standing-coulter opening the furrow to receive the seed, and cutters on each side covering it. Depth adjusted by a lever.

The David Bradley, Manufacturing Co., Indianapolis, Ind., showed a check-row corn-planter. Moving machinery all below. May be used as a hand-dropper.

Also, the Peoria hand-dropper.

Norris Bros., Rushville, Ind., exhibited a two-horse wheat-drill. Force-feed. Hoes zig-zag by a lever. Depth of planting regulated by a compress lever.

P. P. Mast & Co., Springfield, Ohio, showed a grain-drill with fertilizing attachment, which has a glass feed to guard against the corrosion of acids in commercial fertilizers.

Also, two drills with jointed tongue and rear pressure regulating depth of planting. Castor wheel in front.

The David Bradley, Manufacturing Co., Indianapolis, exhibited the Eureka Wheat-drill. A runner similar to that used in corn-planters opens the seed bed, and a pressure wheel follows on each drill row. Force feed.

Also, the Havana Wheat-drill. In this, the weight of the drill is borne by the runners and the pressure wheels behind.

The King Drill Co., Logansport, Ind., exhibited four one-horse wheat-drills. One three-hoed wheat-drill with fertilizing attachment. Single seed box. One five-hoed drill with single seed box and castor wheel in front. One five-hoed drill with three boxes, and one three-hoed, with one box. These are well adapted to wheat sowing among corn. They are well made implements.

James Campbell, Harrison, Ohio, exhibited three one-horse drills, one wooden frame drill, the same with fertilizing attachment, and a drill and corn-planter combined. All plain implements, well made and strong.

Gere, Truman, Platt & Co., Owego, New York, showed a fertilizing grain-drill. Force feed. Fertilizing attachment in the rear, operating with an oval cup force feed. A grass sower combination detachable from the drill.

Also, Champion drill with sliding feed. Otherwise as above.

Also, a one-horse grain-drill with a revolving force feed. Convertible into a corn-drill by change of feed plate.

Rude Bros., Liberty, Ind., exhibited two eight-hoed grain-drills. One with a fertilizing attachment and both with grass seed attachments.

Also, one five-hoed one-horse drill with fertilizing attachment, one without fertilizer, and a plain three-hoed wheat-drill. These were made of good material and well finished.

P. P. Mast & Co., Springfield, Ohio, exhibited two hay rakes with spring-steel teeth, steel axle and foot lever dump.

Band & Foreman, Liberty, Ind., showed a revolving, wooden hay rake, center-lock and controlled by a hand lever. A cheap and strong implement.

The David Bradley Manufacturing Co., Indianapolis, exhibited one hand-dump hay rake with twenty spring-steel teeth; stick cleaner.

Also, a hay rake with twenty steel teeth; the weight of the driver acts as a dumping force, overhanging the cleaner.

Also, a self-dumping hay rake with spring-steel teeth.

Rude Bros., Liberty, Ind., showed a sulky hay rake, twenty spring-steel teeth, hand-dump by lever.

Also, Stewart's self-dumping lawn rake, a very ingenious contrivance.

Beadle & Kelly, Troy, Ohio, exhibited a perfect self-dump hay rake, twenty steel teeth.

Also, a release-lock dump rake. The steel teeth are attached by a spiral coil.

Also, the same with the teeth attached by being coiled around the bar.

Albion Manufacturing Co., Albion, Mich., showed a hay rake with twenty spring-steel teeth attached to a round axle by a coil. Hand-dump.

Also, the same with a wrought iron axle, trussed, twenty steel teeth, hand-dump.

George W. Brown, Galesburg, Ill., Beadle, Kelly & Co., Troy, Ohio, Deere, Mansur & Co., Moline, Ill, and the Richmond Check-Row Co., Richmond, Ind., exhibited check-row wires and machinery designed to drop corn so as to produce rows of hills in directions at right-angles with each other. Those exhibited all operate on the same principle and differ only in the minute details. In the main the device is a complete success, if care is taken in dropping the first hill in the proper place. It saves the labor of one hand in corn planting, and that, of itself, is a matter worth considering.

Gere, Truman, Platt & Co., Owego, N. Y., exhibited a spring-toothed seeder, distributing seed pretty uniformly over a space five feet in width, which is followed by a spring-tooth harrow arrangement covering the grain and leaving a fine seed-bed.

An implement similar to the above in its essential details was exhibited by the *Albion Manufacturing Co., Albion, Mich.* It is a good piece of farm machinery but we are not prepared to say that the seeder has any special merits above the wheat drill.

Moses Meilner, Leesburg, Ohio, exhibited a ditching machine which cuts a ditch seven inches wide, single cut, but which may be doubled. It is a repeater, cutting from three to five inches at a cut. It can cut forty inches deep. It does its work y a succession of spades working on a cam. It is a four-horse machine.

The Elevator Ditching Machine Co., Newark, Ohio, exhibited a ditcher that loosens the earth by cutting-shovels working under a large, revolving disc of iron. The earth is elevated by iron buckets that are drawn back at the top of the disc, discharging their contents laterally. It cuts a ditch forty inches deep by repeated cuts.

NOTE.—A trial of these machines was attempted on the Fair Grounds, but, owing to a bed of gravel in the loam, encountered eighteen inches below the surface, it was abandoned. Both machines worked well in soil free from gravel.

REMARKS AND SUGGESTIONS.

The display of earth-working and seeding implements at the Fair of 1885 was both large and excellent. The most noticeable feature is the extent to which steel is taking the place of wood and iron. The advantages of this are a great increase in strength in proportion to the weight, and a diminished liability to rust. The only objection is that the difficulty in welding steel generally forbids repair at the country blacksmith's in case of breakage. Nowhere are better farm tools and machinery to be found than were exhibited here.

A number of articles were entered that your committee was unable to find. Some of them, we ascertained, were not on the ground; others were perhaps there, but without any entry-cards on them by which we could distinguish them.

It is to be regretted that a want of space prevents any proper arrangement or classification of exhibits on the ground.

Another defect, which justice to our Fair demands should be remedied. Numerous displays of non-premiumed articles were made of which no entries are found on our books. This year these unentered exhibits amounted to nearly one-fourth of the large show of agricultural implements displayed. Of these our published reports can take no notice, and to that extent the reader will be misled as to the display made. Complaints have reached us that large exhibits were not examined by the committee, and when the exhibitor was reminded of his own neglect, he would profess not to know that an entry was necessary.

Would it not be well to withhold exhibitor's passes, where no entry-card is shown?

SPECIAL MERITS

—OF—

EXHIBITS IN BOOK "E."

Examined by

C. E. MERRIFIELD.

HARVESTING MACHINERY.

The exhibit of this line of machinery was exceedingly large and made with much artistic taste and mechanical skill.

The Minneapolis Binder and Harvester, exhibited in that company's building on the Fair Ground, was a very beautiful machine. It is supported by a swinging link, which gives a perfect balance on the drive wheel and relieves the horses necks while at work. The gearing is in a solid boxing and is thus prevented from cutting out by reason of any vibration of the frame. The machine throughout is well constructed and made on the latest improved plan of the Appleby Binder.

The Plano Manufacturing Company, of Plano, Ill., exhibited two harvesters and binders, one self-rake reaper and one mowing machine, all very neat in appearance and well constructed. The steel frame of their harvester commends itself to the public, in this age of steel, and it will no doubt answer its purpose admirably.

The "Champion" machine, manufactured by *Whiteley, Fassler & Kelley, Springfield, Ohio*, has kept pace with the demands of the age. The company exhibited a self-binder, a self-rake reaper, and two mowers, all models of strength, mechanical neatness and skill. Their binder presents every evidence of that degree of perfection which follows long and careful trial in the hands of skillful artisans.

Aultman, Miller & Co., Akron, Ohio, had a splendid line of their harvesting machinery on exhibition. The binder that attracted greatest attention was their Improved Down Binder. It is one of the lightest, simplest and most perfect harvesting machines yet invented, to which has been added a sheaf carrier, which will save the expense of one shocker. They also showed their light elevator binder, which has several valuable improvements, including a folding binder, which folds up to pass through gates. Their new Akron Mower makes a fine appearance and has proved a success.

Wm. Deering & Co., Chicago, Ill., made an exhibit in their building that was very attractive, their binder being put in motion on a circular track as though in the field. They exhibited a variety of mowers, all of excellent quality, and their machines are uniformly light, strong and neatly made. Their light self-binder is of a style that is well adapted to small farms, while their "Old Reliable" standard machine will, no doubt, be found to do well in any field.

D. M. Osborn, Albany, N. Y., made a very large exhibit of self-binders, reapers and mowers, and binder trucks. Among the desirable features of their machines is the folding cutter bar of these mowers, the machines being made either front or rear cut to suit the customer. Their steel framed binder and iron road wheel, made in adjustable sections, and the double angle iron cutter bar and the reel hoisting device, which is operated by a worm gear, are all points of great merit.

John P. Many & Co., Rockford, Ill., exhibited two mowers, very attractive in design, constructed with improved cutting apparatus and floating finger beam, together with other important improvements.

Hoover & Gamble, Miamisburg, Ohio, exhibited their Excelsior Harvester and Binder. Also, a self-rake reaper and light mower.

The binder is so low as to almost present the appearance of what is known as the "low-down" binders, but has all the well-tried features of the successful elevator binders, and is doubtless destined to take a high rank among the successful binders of the age.

The Empire Binder, shown by *J. F. Seiberling & Co., Akron, Ohio*, is a triumph of mechanical skill. It is to the determined energy and perseverance of such old and well-established houses as this that much of the advancement in the mechanical appliances of modern times is indebted. The success of this house is founded on the well-known integrity of its managers, and its wares are among the most reliable on the market.

The Eureka Mower Company, of Utica, N. Y., exhibited two of their celebrated Center-Cut Eureka Mowers, of six and seven-foot cut. This machine has a floating bar which runs directly behind the team, and in front the drive-wheels, which are forty-two inches in diameter, doing away with all side draft and leaving the grass in excellent position for drying out rapidly. The bar can, by a lever, be raised eighteen inches high to pass over obstructions, and the draft of one of these wide-cut machines is said to be as light as any ordinary mower.

The Wayne Agricultural Company, Richmond, Ind., showed a beautiful light mower and other goods in good taste.

The Milwaukee Harvester Company showed both a five-foot and a six-foot self-binder, each of excellent type and workmanship. Their cam motion for the knotter seems to be a good as well as a novel feature in binders.

The New Clipper and Triumph mowers and reapers were exhibited by *D. S. Morgan & Co., Brockport, N. Y.* The Clipper was one of the first successful mowers, and still has great prestige as a light and durable machine.

The Peerless Reaper Company made a fine exhibit of self-binders and mowers. This company has a large branch office at Indianapolis, Ind.

The Esterly Harvesting Machine Company also had a fine display. They also have a large branch house at Indianapolis, Ind.

Walter A. Wood, Hoosac Falls, N. Y., whose goods have been on the market for lo! these many years, came again to the front with new and improved machines, exhibiting a self-rake, a one-wheel reaper, two binders and three mowers, all showing great skill and taste, as well as fine mechanical construction.

The McCormick Harvesting Machine Co., made a fine exhibit, showing a full line of grain and grass-cutting machinery in motion. The McCormick New Steel Binder is a new departure and is certainly a wonderful combination of beauty, utility, strength and lightness, and a model of symmetry, compactness and neatness. In all its metallic parts it is almost wholly constructed of steel and malleable iron, which takes away some three hundred pounds of dead weight and yet makes the machine of increased strength. The master wheel is all of steel. The McCormick Center Draft Mower, cutting a six-foot swath, is another new machine. One of its most valuable qualities is the fact that the hay is left in such shape that it cures much quicker and better than when cut with the old style mower, thus saving the use of a tedder, increasing the value of the hay and enabling the farmer to commence putting it up several hours earlier in the day, thus lessening the risk of damage by rains. The well-known McCormick No. 1 and No. 2 Mowers, the Imperial Combination Reaper, the Daisy Single Reaper and the Combined Dropper and Mower completed their exhibit.

In binder trucks there were exhibited several kinds, each possessing some merit. The exhibitors of these were:

D. M. Osborn & Co., Cleveland, Ohio; Ewald Over, Indianapolis, Ind.; C. F. Merrifield, Indianapolis, Ind.; The Ohio Rake Co., Dayton, Ohio, and the Marseilles Manufacturing Co., of Marseilles, Ill.

In hay rakes there was a good exhibit.

Beadle & Kelly, of Dayton, Ohio, exhibiting four styles of great merit.

The Bradley Manufacturing Company, of Chicago, having a large branch house in Indianapolis, in charge of J. B. Holton, also exhibited a very attractive line of hand and self-dump rakes.

The Ohio Rake Company, of Dayton, Ohio, also made a good exhibit of rakes.

T. V. Meyer & Bro., of Ashland, Ohio, exhibited a very fine line of haying tools, including horse hay forks and carriers, both double lock and single lock, of great merit.

The hay tedder shown by the *Sterling Manufacturing Company, of Sterling, Ill.*, deserves to rank among the most meritorious of improved farm machinery. The necessity of "making hay while the sun shines" is proverbial, and the hay tedder will largely assist nature to rapidly cure the hay and prepare it in the shortest space of time for the mow.

A new departure in haying tools is the automatic hay gatherer and stacker shown by *Truman, Reynolds & Allen, of Kansas City, Mo.* This machine gathers the hay from the swath, taking it directly to the stack (in the field), and stacks the hay, thus saving much labor in raking, cocking and pitching the hay, and is a machine undoubted merit.

The Eagle Machine Co., Indianapolis, Ind., exhibited an automatic swinging straw stacker. Also, a hand swinging straw stacker, both simple, strong and durable machines. This class of machinery is becoming deservedly popular with threshing machine men.

C. E. Merrifield of Indianapolis, exhibited the Imperial Straw Stacker. This is an automatic swinging machine of good design and construction, one of its chief points of merit being a worm gear used instead of the ordinary ratchet gear for hoisting the outer end of the carrier, while the short wire ropes used for hoisting, and the absence of loose joints, make it a very strong and convenient machine to operate.

Reeves & Co., of Columbus, Ind., showed two automatic swinging straw stackers, both very complete in their operation. To this firm the country is indebted for the first successful swinging straw stracker, which machines have wrought such a revolutions in the methods of stacking straw. By these machines it is claimed that on large stacks two men will do in good manner the work that would have required seven men by the methods in use five years ago.

The following named firms each showed hay-carriers, viz:

The Superior Drill Co., Springfield, Ohio; J. E. Porter, Ottawa, Ill.; Oburn Bros., Marion, Ohio; Meyers Bros., Ashland, Ohio.

The last mentioned firm showed a combination of haying tools, which are furnished at very low figures and are thoroughly reliable.

Fanning mills were exhibited by the *Newark Machine Co., of Columbus, Ohio; the Marseilles Manufacturing Co.. Marseilles, Ill., and C. E. Merrifield, of Indianapolis.* The Monarch Fanning Mill shown by the first named company seems to be complete in every respect. Its sacking attachment is a new and meritorious feature.

Corn shellers were exhibited in a great variety of styles, from small hand shellers up to large power shellers with elevator attachments.

The principal exhibitors in this line were as follows:

David Bradley Manufacturing Co., Chicago, Ill., corn sheller and feed grinder combined.

Gere, Truman & Platte Co., Cleveland, O., two hand power shellers.

Barnard & Leas Manufacturing Co., Moline, Ill., one elevator sheller, one combined sheller and cleaner.

Marseilles Manufacturing Co., Marseilles, Ill., one self-feed sheller, one hand sheller.

Ohio Rake Co., Dayton, Ohio, one sheller.

Eagle Machine Co., Lancaster, Ohio, one single and one double-hole sheller.

The Newark Machine Co., Columbus, Ohio, has been a yearly exhibitor at our State Fair for the last ten years. They had a very commendable exhibit, and entertained the farmers and threshermen by hulling clover seed upon the fair grounds with their celebrated Victor Double Huller Clover Machine, and always draw a crowd to see their Monarch Fanning Mill, Seed Cleaner and Bagger, the only self-bagging fanning mill known. They have secured the control of the manufacture and sale of the celebrated Imperial Automatic Swinging Straw Stacker, heretofore manufactured by C. E. Merrifield, of Indianapolis, which they will exhibit among their implements on our fair grounds next season.

The Birdsell Manufacturing Co., South Bend, Ind., were on hand as usual, with their Double Cylinder Huller, and plenty of clover to thresh on the grounds to demonstrate the practicability and merit of their machine. The value of clover for keeping up the fertility of the soil is incalculable, and this company deserve great credit for their efforts in the past, to both make it practicable for farmers to clover their ground and to convince them of the merits of so doing.

The exhibit of threshing machines was simply immense, and a whole volume would not contain all of the points of merit claimed for them all.

The "New Eagle," built by the *Eagle Machine Works, of Indianapolis*, was first on the list of entries, and looks a model and well proportioned machine.

Entry No. 2 was made by the *Harrisburg Car Manufacturing Co., Harrisburg, Pa.* This company shows a new feature in threshing machinery, being a combined thresher for wheat, oats, etc., with a double cylinder, which can be utilized for hulling clover, which adds greatly to its utility.

Roberts & Throp, Three Rivers, Mich., were on hand with their standard and excellent Invincible Thresher.

Case, Willard & Co., Battle Creek, Mich., exhibited the Advance Thresher, which has many new and attractive features. This company is "reaching for the trade" in a manner seldom accomplished by a new concern.

The Huber Manufacturing Co., of Marion, exhibited a handsome line of threshing machinery.

The Springfield Engine and Thresher Co., Springfield, Ohio, exhibited a very complete outfit, including a vibrator thresher and a swinging straw stacker.

W. S. McMillan, Manager for Nichols, Shepard & Co., Battle Creek, Mich., exhibited three thresher outfits. This machinery is so well known and so popular throughout this country that little need be said of it. From this exhibit, however, it could easily be seen that this company had not lost any of its energies nor its determination to keep to the front.

Russell & Co., of Massillon, Ohio, exhibited their new Massillon Separator with clover huller attachment. This machine is one of the least cumbersome of threshers, is very symmetrical and does its work in the most perfect manner.

The transit from the flail and the trodden grain to the groundhog thresher, the chaff-piler, the endless-apron and the whole family of vibrators, has been rapid. One firm of our State, which has kept pace with and been ever abreast of the wants of the times from " away back " in the evolution of this style of machinery, is *Gaar, Scott & Co., of Richmond, Ind.* This company exhibited their " Peerless " thresher. This machine from its introduction took a leading position among the popular threshing machines of the day, which it has since held. Its most novel feature is passing the straw upward from the cylinder instead of downward, while the general simplicity of the machine and the small number of belts required make it very desirable to purchasers.

Whitman & Co., of St. Louis, exhibited a horse hay-press, and turned out many tons of neatly pressed hay on the grounds in proof of its merits.

SPECIAL MERITS

OF

EXHIBITS IN BOOKS H AND I.

Examined by

ISAAC G. TOMLINSON.

Williams & Nordyke, Indianapolis, Ind., exhibited an astronomical telescope, equatorial and alt. azimuth, silver-globe reflector. Its illuminating power is due to the highly-polished glass, upon the face of which is put a film of pure silver, which reflects about 90 per cent. of all the light from an object. The image is reflected to a small plane, silver surface, at a right-angle out of the side of the tube, and the image is carried by a Branden eye-piece. The equatorial has a motion in latitude which, by suitable appliances, is made to revolve very slowly. It has also a motion in right ascension, and recorded by circles. Reading with Varmir *two* to *five* seconds, and also a movement in declination, recorded by circles, reading with Varmir two minutes. The tube revolves in cradle rings, which admit the eye-tube being placed in any conceivable position. The alt. azimuth is designed for extreme portability and cheapness. The equatorial is a finished instrument for any observatory. It has an object glass eight and a-half inches in diameter. The object glass of the alt. azimuth is six inches. The eye-piece adaptor is furnished with an attachment with an instantaneous shutter for holding a sensitive plate for use in photographing. The finder is an anchromatic of excellent quality, with proper adjustments for bringing it into collimation with the large telescope. The small speculum is held in position by a screw-clamping ring like an anchromatic. It is adjustable with three screws passing through the bottom, changeable from the outside, securely locked in position. Both the large and flat are carefully corrected with a series of rigorous tests, and tested finally in the telescope.

Wyckoff, Seamans & Benedict, Indianapolis, Ind., exhibited two Remington Typewriters. Invention has developed but two writing machines, the "Typewriter" and the machine called the "Caligraph." All other efforts in that direction have come to naught, while the two named have each attained a high degree of success in that useful art. The committee experienced some difficulty in gaining an independent non-discriminating description of these machines, as each seemed to follow the "lead" of a friendly war on the other. This typewriter claims that its "hanger" is very heavy and firm, that its journal bearings are wide, its type bars are forged of the best quality of steel. Its bar and hanger are so adjusted to each other that no adjusting screw is needed. The carriage movement is uniform and steady. The driving power is imparted from a scroll shaped spring wheel, made on the principle of the fusee wheel of a watch, giving it constantly increasing power to compensate for the unwinding and decreasing power of the spring. The spring acts directly upon the carriage. The inked ribbon is moved by the main spring of the carriage and is no burden to the fingers of the operator. This machine has thirty-eight keys and writes seventy-six characters. Great simplicity is claimed in the arrangement of the key-board of this machine. The key lever system of the typewriter insures a uniform dip of the keys and a light, pleasant touch. The different keys move practically the same distance, and with the same ease. The typewriter has four banks of keys. All the springs of this machine are made with great mechanical skill and accuracy, and work with a precision and quickness much desired. Only two of these springs ever need adjustment, and in these no tools are required.

H. T. Conde, Indianapolis, Ind., exhibited a caligraph, "The Ideal," for which is claimed great speed and accuracy in doing its work. It writes three times as rapidly as the pen. The carriage is driven by a long spiral spring, which moves the carriage with great regularity and certainty. By a late improvement the caligraph uses very wide paper. The method of operation is simple, easy and effective. Any one can write who knows the alphabet and knows how to spell. The keys are simply touched, singly in succession, by the fingers of either hand, with a *staccato* movement. As the type falls the carriage with the paper moves forward the space of one letter, and is ready, with no attention, for the touch of the finger tips upon the following letter. The spaces between the words are made by simply touching the long keys at either side. A small bell gives warning when the writing approaches the end of the line, that the word or syllable may be completed or properly divided. A single movement of a curved lever in front pulls the carriage back to the starting point, and the paper is advanced ready to begin the next line. The width of margin and distance between the lines are instantly changed. This machine has seventy-two separate and independent characters, and is light, very strong and is made of the best quality of material.

CARRIAGES AND BUGGIES.

The David Bradley Manufacturing Company, Chicago, Ill., and Indianapolis, Ind., exhibited full lines of spring vehicles. This company arrange their work of buggies, phætons, etc., under three classes: "Superb Work," "Medium Work," and "Furst & Bradley Work." Their work, it is claimed, is all made of the best material. In this display there is scarcely any style or shade of buggies not found. These vehicles generally have the Mulholland spring. It dispenses with side bar, consisting of a semi-eliptic spring, coupled to which is a steel rod running under the body, and fastening to a center sill under the body, allowing the body to turn with ease. They also showed an improved "soul spring," which consists of four eighteen-inch springs attached to the under side of the side-bar, to which cross springs of the body are attached, presenting the rigidity of the side-bar. Among this collection was one "sea-spring" buckboard, springs from front to rear.

Also a full line of express and delivery wagons, which have the Racine patent gear. The panels are not tacked on, but cut from the solid board. Each panel is ironed inside and out, and a rivet through each corner. Iron corners, iron straps on the bottom of bed and top of side-boards. Drop end-gate with strap or catch.

Also, one "Thimble-skein" farm wagon.

L. Bimel & Son, St. Mary's, Ohio, exhibited an extensive line of carriages, buggies, phætons, etc. Among the special features of this company's work a few are gleaned. In iron work they use a fine quality of steel axle, round-edged steel tire, Bridgeport oil-tempered springs, Norway iron belts, clips and braces. In wood work they use for wheels select second-growth hickory. Gearing is also made of the same grade of stock as the wheels. The tops and trimming are made of the best material. As to styles, this company exhibited the latest and most improved in the market.

Also, several specimens of their farm wagon, which has some features worthy of especial note. The wheels are filled with second-growth oak spokes, and all parts of the gearing are made of selected oak and hickory. The skeins are all cemented to the axles, making it impossible for them to loosen. They use the hollow or tubular axle, for which is claimed superior strength. This company have in use on their wagon a self-oiling skein, their own patent. This device oils the spindle with wonderful certainty and precision.

The Middletown Buggy Company, Middletown, Ohio, John B. Harker, Agent, Indianapolis, Ind., displayed a splendid assortment of buggies and phætons. This company set forth as their main point of merit the superior quality of material and workmanship employed in all their work. In all prominent parts nothing but second-growth or seasoned hickory is used. They use nothing but the finest quality of most improved solid steel axles, oil-tempered springs, and purely refined steel tire, hand-buffed solid leather tops and curtains, choice cloths (fast colors), and spring cushions on all work. All the different kinds and styles of work exhibited by this company bear unmistakable evidence of honest and durable work, as well as satisfying a refined taste for neatness, beauty and elegance.

Charles H. Black, Indianapolis, Ind., showed an extensive lot of buggies, phætons, carriages, drummer wagons, etc. Mr. Black manufactures all his work at his own shops under his personal supervision. He claims to employ none but the most experienced labor, and to use none but the best material in construction of his work. He uses Sarven and banded hub wheels, hand buffed leathers, nod dye cloths, Norway iron belts and clips, and Swedish steel tire and springs, of the best standard makes. In addition to his display in the vehicle line, he exhibits a "buck wagon" side-bar, answering the place of a buggy at the cost of the ordinary buckboard. It has top, seat and cushions, quite becoming to a buggy, yet retains all the essential features of a buckboard. Another novelty, is a Jersey Wagon, which will accomodate either two or four passengers, shifting seat by means of arms, combining the features of a two-seated carriage.

The Amesbury, Mass., Buggy Co., G. M. Shover, Agent, Indianapolis, Ind., have a collection of buggies of different kinds and styles. It is claimed that these buggies are made of first-class material, front seat as well cushioned as back. These buggies are well proportioned and attractively finished.

Also, of his own manufacture, Mr. Shover exhibits a line of bakery, delivery, and farm wagons. It is only just to say that these wagons all combine the essential features of honest, durable vehicles. The bakery wagon is a novelty of convenience, and a thing of beauty.

Howland & Johnson, Indianapolis, Ind., had on exhibition one Spring Park Wagon, and three spring wagons and half platforms. The principal thing claimed for these is that they are good, durable wagons.

They also exhibited several "Moline wagons." These lay claim to a front position in the procession of farm wagons. The following are some of the points of merit advanced: Thoroughly seasoned lumber, the wheels before being tired are thoroughly soaked in boiling linseed oil, as a preventative against loose tire. The boxes are made of the best clear yellow poplar, with heavy straps, and side-braces ironed with bevel box iron on top, and with yellow pine thoroughly seasoned, matched with tongue and groove for the bottom, and painted with the best material. The bolsters are heavily plated on top. Axles for Thimble Skein Wagons exclusively of hickory. The skeins are cast very heavy and perfectly round.

The Columbus Buggy Co., Columbus, O., Backus & Regan, Agents, Indianapolis, Ind., display a large assortment of buggies including all kinds and styles on the market. It is hardly necessary to say that a manufacturing company of such colossal proportions do not fall short of combining all the modern improvements attaching to their line of work. They make the usual claim of "None but best material." These buggies are of the most elegant fininsh, and show every evidence of compactness and strength. One Wagon, canopy top, will carry 1,600 pounds, full Brewster and Spring side-bar, of second growth hickory, steel tire and axle, 18 ounce trimming.

Also, top buggy, weight 234 pounds, will carry 600 pounds. This company had on display 20 different styles.

The Connersville Buggy Co., Connersville, Ind., exhibited several buggies of their own manufacture. This company claims to make no "shoddy" work, but every thing first-class, and the silent, still voice of their vehicles clearly corroborates this claim. They make a specialty of a sewing-machine wagon. Body hangs low; easy to turn; very light of draft; bed without mortise or sills. The seat rests on two curves. All these vehicles suggest to the observer the leading object of the manufacturers—*lightness* and *durability*. This company makes strong claim for the superiority of the "Eureka Gear," used upon much of their work.

Wayne & Anderson, Decatur, Ill., exhibited three road carts. Their leading point is on the *spring*, which is certainly an advance in the direction of a perfect road cart. It is a double spring, transferring the weight of the passenger to the axle, breaking motion of the horse by a knuckle-joint attached to the circle-bar. A knuckle-joint on the axle is attached to the end of the spring, the upper half similar to the lower. In short, the whole thing consists of two springs knuckled to the circle bar and axle respectively, the other ends united just in front of the driver's feet. This cart not only rides easy, but carries the passenger as independent of the motion of the horse as an ordinary buggy. This spring is Mr. Wayne's own patent, and used exclusively on the Wayne Champion Road Cart.

The Springfield Wheel Co., Springfield, Ohio, exhibited a wheel which is a circle of wonder. The "Star Wheel" makes some strong and bold claims to superiority. The felloe of this wheel is not bored to receive the spoke, but instead thereof a metallic socket is sawed into the felloe lengthwise; each socket has lips or clamps binding over side of felloe, and socket ¾-inch long driven in the end of spoke. In this wheel a spoke can always be placed under the ends of the felloe, thus forbidding the reasonable chance for giving of the felloe. On account of each socket having a bearing of three inches on the felloe it is claimed that a stronger and lighter wheel can be made with fewer spokes than by the old boring process. These wheels have been in use about one year.

J. F. Johnson, Indianapolis, Ind., had on exhibition a "Wheel Jack," a screw threaded from end to end, turned by a socket lever, to tighten the felloe and to open the way by means of a crank screw for the spoke socket without taking out the spoke.

The Rushville Road Cart Co., Rushville, Ind., exhibited six of their spring road carts. The leading points advanced in favor of these carts are their superior strength and durability, being made of the best material, and convenience of getting in and out of. This company from year to year advance with the tide of improvement characteristic of this wonderful age.

Studebaker Bros.' Manufacturing Company, South Bend, Ind. The beautiful pavilion of this company was filled to overflow with buggies and farm wagons. Among their generally good and attractive display of buggies is one especially worthy of note—a "jump-seat carriage"—which, by an ingenious contrivance, is readily and quickly converted from *one* to *two* seats. To look at the one seat one would hardly think that in less than one minute enough could be removed from it to make the second seat, and yet each be complete in itself. The farm wagons of this company use patent-shouldered spokes and patent-truss axles, always using hickory axles and black birch hubs; all timber seasoned from three to five years; all axles soaked in linseed oil; carries one million dollars worth of lumber from five to seven years in stock ahead. They build over three hundred styles of buggies and wagons. A noted and novel feature of their display is a wagon recently exhibited at New Orleans, the painting of which is the finest quality of oil painting consisting of reeds, birds, reptiles and numerous other queer devices. On the dash-board is a beautiful vignette, circling the top of which is written in golden letters, "To Old Hickory, the Hero of New Orleans." Circling the bottom is written "The Studebaker Brothers send Young Hickory from Indiana," and between these types is a large hickory log, across which lies a vigorous young hickory. This is the most elegantly painted wagon ever produced in the United States. This company own the building in which their display was made.

Whitehead & Wright, Indianapolis, Ind., exhibited a general display of monumental work, embracing rilievos, busts and statuettes, such as would be no discredit to an Italian museum. Most prominent are three memorial pedestals surmounted by figures in white Carrara marble, artistic in design and in chiseling. The central one of these is intended for the last resting place of the late Colonel Bennick, of Winchester, one of the most noted of Kentucky stock breeders. The pedestal is of dark Barre granite, and showing in its panels a relief likeness of Col. Bennick, a group of cattle heads, and some other appropriate and faithful representations. It would be impossible, in so brief a space, to give especial notice to the numerous lesser works within their enclosure; but a presentment in marble of Major Gordon will attest the fact that this firm can produce sculpture which is as faithful to nature as it is skillful in execution. This firm deserves much credit for their enterprise, as shown in the great expense it incurred in shipping such enormous stones to the Exposition building.

August Diener, Indianapolis, Ind., exhibited a beautiful display of marble and monumental works, made of Scotch granite, Esporanza and Italian marble. All their work is "done at home." They display twenty designs, the design and workmanship of which are highly creditable. The "lead" of this house is monumental work, and in that especial line is shown the hand of the truly skilled artificer. Mr. Diener exhibited no work of very colossal dimensions, owing to the great expense of shipping.

"*Talbotts,*" *Indianapolis, Ind.*, exhibited a general assortment of wooden and willow ware, consisting of one hundred and fifty different kinds of articles. The celebrated Udell ladders, cedar ware of all kinds, plant tubs, every variety and style of buckets known, Doty wagons, willow chairs, etc. This display of wondrous beauty and variety is very suggestive of the high state of utilitarian development of this age, as well as of the enterprise of the "Talbotts" firm.

M. S. Huey & Son, Indianapolis, Ind., exhibited a large assortment of sashes, doors, blinds, mantels, etc. This collection of building outfit is made of the best quality of lumber, and the workmanship is par excellence.

The Hall Manufacturing Co., Providence, R. I., exhibited a mane and tail brush, which is a novelty in the brush line. The teeth are made of superior steel spring wire and are fastened in such a way that they slip with great ease through the most tangled mane and tail, with no risk of breaking or bending. They afford a great economy of time over the old-fashioned combs and brushes. This useful device is still another evidence that little Rhode Island is not least in the great sisterhood of invention, and that Hall & Co. are full of enterprise.

J. F. Smith & Co., Indianapolis, Ind., display a number of bicycles and tricycles of different style, and manufacture the "American Challenge." The forks, head, neck, bearings, spokes, rims and pedals are made of forged and welded steel, the rear fork being of the modern shell or semi-hollow pattern, formed of steel in one piece. The backbone is one and one-half inch in diameter, of weldless steel tube, properly tapered and brazed to the rear fork and neck; it has the longest and most rigid neck in the shortest possible space in which it can be placed. The upper part of the neck extends clear above the head. The forks are solid, of oval pattern, strong and light. The peculiarity of the bearings consists in being supported or held in spherical cases formed on the fork ends. The saddles are the new long-distance pattern, with adjustable tension. The American Safety is built on the principle of placing the weight of the rider nearer the ground than in other machines, and is intended more especially for rough roads. "The Ideal Bicycle" is a new machine and claims great superiority in some respects. Severel other bicycles and tricycles are exhibited by this firm, all of which claim some point of especial merit.

SPECIAL MERITS

—OF—

EXHIBITS IN BOOK "J."

Examined by

MRS. HAWKINS, BRAZIL, IND.

Child & Bradley, Indianapolis, Ind., exhibit specimens of cleaning work done by the Acme Renovator on body Brussels and tapestry, plush, velvet and ingrain carpets, car seat covers, and a variety of kinds and qualities of rugs. The special merit of this renovator lies in the facility with which it can be used for cleaning heavy carpets without lifting them from the floor. It is also excellent for general laundry purposes, and for the toilet, being free from any injurious effects upon either fabric or color.

Wm. Bellis, Indianapolis, Ind., exhibited the Coin Mailing Book, a newly-invented article, patented and manufactured by himself. By means of the book money in silver coin, ranging in value from five to fifty cents, can be sent to any distance through the mail in perfect safety. It consists of two thick paper leaves, on one of which is fastened a pasteboard card having four holes, the size of a nickel, a dime, a quarter and a half dollar each, the pasteboard being fastened by gum to one side of one leaf, thus forming receptacles for the various coins named. The other leaf, wich has been previously prepared with mucilage, is now moistened and fastened down upon the face of the card containing the coin or coins, and, after having the address written upon the lines on the back of the book, is ready for mailing.

Nathan Blume, New York, exhibited a fine line of jewelry, such as finger-rings, bracelets, earrings, scarfpins, breastpins and necklaces. They manufacture their own goods, making a specialty of Brazilian diamonds, which they import in the rough stone from South America. The cutting, facing, polishing and setting is all done under the supervision of Nathan Blume.

T. H. Noonan & Co. exhibited the universal glove-cleaner, for which they claim entire freedom from any injurious effects upon the fabric or color of kid-gloves, cloth, silk or woolen goods.

C. H. Schultz exhibited an assortment of grasses, both native and imported, which were artistically arranged in vases, baskets, boquets and various shapes for ornamental purposes. The Liquorpodium, from Michigan and Wisconsin; the Immortelle, from France, and the beautiful Pampas grass were distinctive features of the exhibit.

G. Varin & Co., Indianapolis, exhibited a good assortment of wigs, frizzes, hair switches, curls and braids. Also the Boko, an article of his own invention and manufacture.

Z. T Staples, Brown County, Indiana, exhibited spectacles and eye-glasses of his own manufacture. A very creditable display of a variety of kinds of spectacles in clear and colored glass, in steel, nickel and gold and silver frames.

The Automatic Rug Machine was exhibited by *S. A. Schofield & Son, Morenci, Mich.* The inventor displayed the machine with a variety of rugs, both finished and in process of manufacture, several of which were very beautiful.

B. C. Wandell, Indianapolis, exhibited steel-wire bed springs, weather strips and fire-escapes. The bed-springs, with the machinery used in making the coiled wire for the springs, are the invention and manufacture of the exhibitor.

Wm. G. Rubush, Indianapolis, exhibited three mantlepieces of his own handiwork:

1. One plain modern style mantle and mirror frame, of poplar wood.
2. One Eastlake mantle and mirror frame, with carved side shelving, from quartered oak wood. Tile lining and tile hearth.
3. One Queen Anne mantel, with shelving and minor frame, square shape, of sycamore wood. These were all of native Indiana wood, and a highly creditable display of home growth and home manufacture.

The Excelsior Bosom Board and Stretcher, was exhibited by *S. J. Lackey.* A labor-saving article for laundry purposes, consisting of a board and solid neck block, which shapes the shirt neck-band as it is ironed.

C. L. Hutchinson, Indianapolis, exhibited a good line of carpetings and rugs in Brussels, plush, ingrain, and rag carpets. This dealer had on exhibition the old-fashioned loom for weaving rag carpets. Under favorable circumstances from 20 to 22 yards per day are turned off from this old timer.

Chas. Mayer & Co., Indianapolis, exhibited a magnificent line of toys, dolls, fans and imported vases in choice wares. A handsome cherry-wood child's book-case, containing several sets of handsomely bound books. Also a cherry-wood writing desk for child. The display of one hundred and thirteen dolls, no two alike, was a striking feature, rendered still more attractive by their arrangement in the immense glass show case. The Roman vase, a novelty in pottery; the vase having been soaked in water and sprinkled with Roman grass seed is soon covered with a thick growth of green mossy grass, making a handsome ornament.

A. J. Mueller exhibited a piece of handiwork deserving special mention as a display of artistic skill—a carved easel and rack for drawings combined. The easel stands about six feet high and is in perfect proportion. It is made from walnut and beautifully polished. The back and front of the rack are both carved in delicate floral designs, and held together by small brass chains at each end. The center of the front half of the rack bears the initials "A. W. W." in bold relief against a fretted background, while underneath these letters stands the date "1884," contrasting to the date 1842, which appears on a paneled cross-piece near the top of easel. The designs and work are by an amateur, and do him much credit.

R. R. Parker, of Indianapolis, exhibited a good display of gentlemen's furnishing goods, exclusively— shirts, collars, neckwear and underwear of excellent quality.

Vajen, New & Co. exhibited a full line of hardware goods of every description, to suit carpenters and builders, blacksmiths, farmers, gardeners, millers, jewelers, tailors, butchers, barbers and housekeepers. Their exhibit of hammered brass and bronze fire fixtures, of nickel and silver-plated cuspidores and coal receivers was a feature. The specialty was the Vajen Co. Plumb Bob and their Cash Register Box. The plumb bob is so designed as to overcome all disadvantages, is capable of being adjusted to any or all forms required by the millwright, mechanic or civil engineer.

The Vajen Cash Register is a transparent glass box, or receiving chamber, having a slanting bottom, with mechanism for working the trap. The party reporting the sale hands the money to the cashier, and drops the sale ticket into the register. The check alights upon the trap in position, and in line with the cashier's vision; the inscription upon the ticket being rendered quite distinct by the light from the opposite side, is easily read. The change is now made from the the cash drawer, after which the cashier touches the button which springs the trap and precipitates the ticket into the drawer beneath, where it remains undisturbed until the time to balance the cash account. The cash being thus registered by two parties, each a check upon the other, without the necessity of verbal communication, the possibility of error is overcome.

Otto Stechen exhibited an upholstered chair called the Combination Chair. Its distinctive features are that it can be transformed from a plain upright office chair into a rocking chair, and from that into a reclining chair or couch, and again from that into a cradle, which vibrates with an easy spring. This invention was made and patented by John Preston, a mechanic of Indianapolis.

New York Steam Dental Co. exhibited handsome specimens of their work.

A. B. Yohn, Indianapolis, exhibited a fine sample supply of books and stationery. His specialty is Sabbath-school books, maps and charts, banners and cards for the use of Sunday-schools. The display of maps was very fine.

E. H. Eldridge & Co. exhibited an electric appliance, and the Electric window-cleaner, of their own manufacture.

J. W. Gray, Indianapolis, exhibited a handsome ship in full rig. A fine piece of work, showing much artistic ability, and a great degree of patient perseverance.

Dr. H. W. Hendricks & Co. exhibited a galvanic belt. The battery is composed of links made of zinc and copper, with paper pad between the metals to absorb the sulphuric acid, which, being applied, generates the current of electricity which, passing into the human system through the pores, acts upon the nerves and vital organs.

J. H. Clark & Co. exhibited a very fine display of upholstered chairs known as the physicians' and surgeons' operating chairs. They are perfectly simple in adjustment, noiseless in movement, and can be placed at any angle with the patient in or out of the chair. The chair seat is at the proper hight, and does not have to be raised or lowered by ratchet, thus doing away with all embarrassment to both the patient and physician.

The same company have on exhibition, also, their own manufacture of organs. The instruments made by them are of excellent workmanship, fine, sweet tone, and of good power.

L. J. Restiss and E. Rayfield, Chicago, Ill., exhibited the safety hollow-ware. The vessels consist of an iron pot with inner lid with perforated holes the size of a dime. The lid being placed in the pot, which has been half filled with water, answers for a bottom upon which to place vegetables or a bag containing pudding, or any articles which can be cooked by steam. The pot is now covered by an outer lid, which fits perfectly tight until the boiling begins, when the heat can be regulated by means of a valve in the outer lid, which can be raised or lowered at will. Meat can be boiled in water in the lower half of the pot while vegetables are cooked on the perforated lid in the middle.

W. H. Potter exhibited a fine display of photographs in the different styles known to the profession. The specialty in this case seems to be great thoroughness in the details—in fine lights and shades—in delicate outline.

A. J. Cartwright, Indianapolis, exhibited a nice display of crayons, of real merit.

The Model Clothing Store, of Indianapolis, a branch of the manufacturing house in Rochester, N. Y., made a fine exhibit of clothing arranged in a most artistic manner. Their children's imported suits, gentlemen's smoking caps and jackets, gentlemen's robes and a large line of furnishings, were in almost endless number and variety. The peculiar feature of this display was the wax figures in full costumes from the store, and also the magnificent floral decorations which added largely to the attractiveness of the fine art hall and business men's exhibit in the Exposition Building.

The Royal St. John Sewing Machine Co. exhibited machines and specimens of work. The claim for the Royal is, that the work can be run through either front or backward; that it has a self-adjusting needle, a high arm and the only machine without yielding joints, and neither cams, cogs or springs.

Wheeler & Wilson Sewing Machine Co. exhibited their machines and specimens of work. The claim for this is that embroidery, quilting, shirring and tucking can all be done without the aid of any complicated or additional machinery. The specimens of work were very beautiful.

Frank L. Dougherty, Indianapolis, exhibited a limited show of honey in the comb and strained, a large supply of beeswax and a very full line of supplies for beekeepers.

A. Cox Boone Co., Ind., White Lick P. O., exhibited a very artistic display of honey. The honey both in the comb and in a variety of shaped-glasses was of the purest quality. Many of the designs into which the bees had built their comb and filled the cells were beautiful and unique. He also displayed a full line of beeplants from which the honey is extracted—the entire list of plants on exhibition numbering forty-nine.

Tucker Glove Store, Indianapolis, exhibited a large variety of gentlemen's, ladies' and children's gloves. Ladies' gloves in from fifty to sixty styles, and sixty styles for gentlemen's use.

The When Clothing Store exhibited a large variety of gentlemen's, boys' and children's clothing and furnishings. They displayed not only a fine line of tailormade clothing for men and boys, but a fine show of robes de chambre and smoking jackets, smoking caps of elegant material and handsomely made. A specialty with this firm, in addittion to their generally excellent stock, is the kilt suits for children and the shirt waists in almost endless variety of goods of both imported and home manufacture.

J. J. Irwin exhibited an elegant line of millinery goods, such as ribbons, laces, crapes and ostrich feathers, all of which are done-over goods. The only article not colored or done over was a magnificent white ostrich feather for a Sir Knight Templar's chapeau of their own manufacture. A very remarkable curiosity was a pillow weighing two and one-half pounds made from the fibers of ostrich feathers saved during eight years. The value of the pillow may be estimated by taking into consideration the fact that ostrich feathers with the stems unremoved cost dealers $1,000 per pound.

Albert Gall, Indianapolis, exhibited carpets, wall paper, curtains, lambrequins, rugs, table covers, curtain poles and cords, tassels and fixtures generally. The line of carpetings comprise body and tapestry Brussels, Moquets, Axminster, velvet, ingrain, with rugs to match in style, quality and price. In curtains can be found Tambour, Brussels lace, antique, Nottingham, Ayrshire, guimpure, silk and silk brocades for portieres and windows. Window and mantel lambrequins and chenille trimmings for the same. Table scarfs and covers. The most elegant specialty on display was a set of plush Valones table covers and an Aubusson curtain, of rare beauty, whose cost was $5,000. Several articles on exhibition by Mr. Gall were of rare value, such as only the crowned heads of Europe or the merchant princes of our own land can indulge in.

C. C. Koerner, Indianapolis Business College, exhibited a magnificent line of fancy penmanship, pen portraiture, sketches and designs of various kinds. Short hand and type writing.

Bryant & Stratton, Indianapolis Business University. This old reliable firm exhibited specimens of penmanship and book work, short hand and type writing by their students, which reflected credit on the institution.

John Vester exhibited a variety of ornamental and useful articles manufactured in the Holy Land from olive wood collected near the city of Jerusalem.

F. P. Smith & Co., Indianapolis, exhibited lamps and lamp fixtures in elegant and various styles.

The Raymond Baby Jumper, a novelty, was exhibited by *D. S. Prentice, South Bend, Ind.* This is a perfectly safe cushioned arm chair, with strap and buckle for holding the child in place in the seat. The chair is suspended from the ceiling by a coiled wire which is fastened to a hook connected to the coil of wire. Two silver-plated bars pass along the sides of the chair and unite about eighteen inches above the back of the chair, from which a single bar ascends to the coil of wire to which it is fastened. Thus the chair is held level and firm.

The Singer Sewing Machine Company, Indianapolis, exhibited fourteen machines in as many different styles and sizes. The company manufacture thirty-six different styles of machine for a variety of kinds of work, from the nine-inch machine to the one weighing one ton and a half, which sews from one to thirty-six seams at once. This large machine is run by steam power and is used in stitching rubber and leather belting, buggy tops, dashes and fenders, or heavy carpetings. The special claim of the firm is the oscillating shuttle, which is used in all these machines, whether run by foot or power.

Staples, Photographer, Indianapolis, exhibited a fine collection of cabinet-sized photographs in different styles. The groups by this artist were exceedingly well executed. The collection was in a handsome circular case, and added much to the appearances of the east hall of the Exposition Building.

H. D. Clark, Photographer, Indianapolis, exhibited a large collection of cabinet pictures of superb workmanship. His pictures were remarkable for bold, clear outlines. Many of the portraits of prominent Indiana statesmen were a striking feature in this display.

The Superintendent of the Indianapolis Schools exhibited specimens of drawing, showing the system as studied in the graded schools under Jesse H. Brown, supervisor of instruction in drawing. The system taught is given in the course of books, published by the Prange Educational Co. The first step of the work is to make the pupil familiar with the common forms of geometry, by means of solids and objects, and have them to express their ideas of these forms by drawing, thus obtaining knowledge of form and skill in expressing that knowledge. This knowledge and skill is applied in three directions, viz:

1. To Construction. Drawing diagrams or working drawings, plans and elevations, and pattern drawings from which objects may be constructed or built. This leads to architectural and all kinds of mechanical and machine drawing.

2. To Representation. Drawings to represent objects as they appear to the eye in different positions, showing the modifications the appearance undergoes from being viewed from different standpoints. This leads to all kinds of figure and landscape drawing.

3. To Decoration. Drawing representing designs for ornamenting objects and surfaces, including conventionalizations of natural forms for this purpose and the study of historical ornament and design. All these different lines of work were illustrated by a large number of drawings, made by the pupils of the public schools in their regular daily work. The specimens from the High School include groups of objects and landscapes in crayon and charcoal. Also, fine specimens of mathematical perspective.

Indiana Educational Exhibit. One of the most interesting exhibits on the second floor is the exhibit of school work and educational matter, made by the Department of Public Instruction. It is practically the Indiana Educational Exhibit displayed at the recent World's Fair at New Orleans, and was prepared by the County Superintendents and teachers throughout the State, under the immediate direction of State Superintendent Holcombe. The exhibit occupied four alcoves near the southeast corner of the gallery. Going east from the stairway, the first of these rooms is called the Picture Room; so called as its walls are decorated with about four hundred photographs of district and graded schools throughout the State, handsomely mounted and appropriately lettered with the county, district or city from which it came. In addition to the photographs in this room, there were also some fine specimens of moulded clay work executed by the children of the Laporte kindergarten, and some very beautiful designs on cardboard from the Laporte city public schools. Passing into room number two, or the Map Room, as it is called, we found the walls completely covered on all sides by elegantly drawn maps of each county, drawn on a scale of one-eighth of an inch to the mile and showing by dots the number and location of each school house in the county. Under each map is mounted a statistical card which shows the number of school houses in each county, value of school property, number of teachers employed and amount of compensation they receive, number of children attending school, average number of school days, etc.; this alone is a very interesting study for one interested in educational work. On one side of this room is a map of Indiana, also showing by black dots the number and location of school houses throughout the State. This map is thickly covered with little black dots and gives the observer an opportunity to form a faint idea of the vast dimensions of this great work progressing for the education of Indiana's rising generation. There are 9,664 school houses represented on this map, at a value of $13,619,561. This room also contained some elegant specimens of needlework and handsome designs for wall-paper; also, some beautiful floral designs in water-colors, all executed by the Lafayette public schools. In each of these two rooms are also tables and counters covered with manuscript work in all branches and from all over the State. Some of this work is perfect and shows the rapid advancement of the young Hoosier mind. Passing into the next apartment, which is the office of the department, we first observe a large and rare collection of books, numbering about four hundred, which are all about Indiana or by Indiana authors; also, a number of very interesting charts, showing the condition of the school funds, school population, and number of women employed as teachers in schools throughout the State. This chart shows that in 1884 there were 6,481 women and 6,821 men employed as teachers. There was an increase of about 1,000 women teachers from 1880 to 1884, and a decrease of about the same number of men. One side of the room is covered with photographs and paintings of all the former State Superintendents of Public Instruction; also, diplomas received by the department at the Centennial, in 1876, and at Paris, in 1878. The Teachers' Reading Circle is also represented by a collection of the text-books used by this association. This circle was organized in 1884 and had over 3,000 members the first year, composed of teachers all over the State. Its object is for reading, study and advancement of the teachers. Its business is conducted by the Secretary and Treasurer, Mr. H. M. Skinner, at the Department of Public Instruction. A handsome photograph of the State Normal School, Evansville school buildings, four photographs of Indiana's exhibit at New Orleans and two large volumes of Indiana newspapers, about four hundred in all, are also objects of interest in this room. The next and last alcove was called college corner, in which was the handsome hand-carved cabinet and drawings executed at Purdue University and the elaborate DePauw banner with hand-painting of all the buildings; also photographs of the buildings and faculty at Hanover College, and some excellent portrait and floral paintings from the Marion Art School. The exhibit, as a whole, was a great success and Superintendent Holcombe, County Superintendents and teachers all deserve great praise for the interest they have manifested in gathering together this elegant work.

COMMERCIAL FERTILIZERS AND NOTES ON AGRICULTURAL CHEMISTRY.

BY PROF. ROBERT B. WARDER, OF PURDUE UNIVERSITY, STATE CHEMIST.

WHAT SHOULD FERTILIZERS CONTAIN?

Every plant withdraws a certain quantity of matter from the soil; and as the supply is thus diminished, it is important to restore an equivalent amount before the soil becomes exhausted. Some of the most costly of these essential constituents are termed phosphoric acid, potash and ammonia; and these are the constituents usually estimated in the laboratory. A certain proportion of lime and other substances are also indispensable for the growth of the plant; but as these are relatively cheap or less often deficient in the soils, they are not considered in estimating the market values of commercial fertilizers. Such articles as barnyard manure, wood ashes and other valuable refuse, are not considered in this place; for, however valuable they may be, they are more often applied at home than bought and sold as articles of trade.

MEANING OF THE ANALYSES.

In the table of analyses given below, particular attention is called to the columns representing phosphoric acid, potash and ammonia. The latter may be obtained indirectly from the atmosphere, as by raising clover, but every pound of potash or phosphoric acid taken from the soil leaves it permanently just so much poorer, unless an equal weight of the same is returned. The figures indicate the number of pounds of each ingredient contained in one hundred weight of the fertilizer, if that is like the sample sent here for analysis. The samples of fertilizers are furnished by the manufacturers themselves, and there is no provision for official inspection. We have not been able to learn of intentional fraud on the part of manufacturers, and we believe the table of analyses will, in general, represent the goods in the market; but the necessity for amending the fertilizer law has been urged again and again.

It is usual to treat bones or other phosphates with sulphuric acid, thus bringing the phosphoric acid into a more or less soluble condition, and making it more readily available in forcing the growth of the plant. There is no absolute line of distinction between soluble and insoluble phosphoric acid, and some of the intermediate grades are known as "reverted phosphoric acid." The conversion of insoluble into soluble or even into reverted phosphoric acid is attended by an expense to the manufacturer; hence these forms can only be sold at a higher price than crude bone or insoluble phosphoric acid. The most soluble forms will yield quicker returns, and are really more valuable when applied with judgment; but, on the other hand, they are more liable to injure the crops when applied in excess, and more likely to wash out of the soil and be lost in case of excessive rains. The estimated "values per ton" are based upon the following scale of prices:

10 cents per pound for soluble phosphoric acid.
9 cents per pound for reverted phosphoric acid.
5 cents per pound for insoluble phosphoric acid.
15 cents per pound for ammonia.
6 cents per pound for potash.

These values are believed to represent the average cost of fertilizers like the samples analyzed, when supplied at retail in commercial centers; but sensible men will neither live entirely on corn bread because it is cheap, nor on venison because it commands a high market value. So, in selecting a fertilizer, the farmer should observe what brands supply the soluble (quick-acting) or insoluble (slow-acting) phosphoric acid in requisite amounts, with any desired proportions of potash and ammonia. Ammonia includes the total nitrogen from whatever source. Fragments of hoof, hair, and even leather scraps yield ammonia when ignited with soda-lime in the process of analysis, but these resist decomposition in the soil a long time, and therefore are of less actual value to the farmer than ammonium salts, nitrate of soda, dried blood, fish scrap, and similar materials. The ammonia (or nitrogen) of a commercial fertilizer, if drawn from the standard sources, is the most expensive ingredient; and purchasers should not waste this by applying it in large quantities to fields that still have a fair amount of organic matter.

METHODS OF ANALYSIS.

Thirty-eight samples of commercial fertilizers sent by manufacturers were analyzed during the season of 1885, as required. The percentages "of soluble and reverted phosphoric acid" have been separately reported, although this involves one more determination for each analysis than the law prescribes.

The so-called "reverted phosphoric acid" has hitherto been estimated by digesting with solution of ammonium citrate in the usual manner at 40° C. In view of the prevailing custom of other States, the temperature of 65° will be adopted for 1886, although (as plainly shown by Professor Huston's work in this laboratory a few years ago) this reagent greatly increases the solvent action upon the tricalcic phosphate of pure bone dust. This difference of method may account for a lower estimate of reverted phosphoric acid than that credited to the same goods in other States; but it will not affect the amount of total phosphoric acid.

The estimation of "potash soluble in water" was preceded by gentle ignition in some cases, when tobacco stems or other vegetable tissues, if left unburnt, would have retained potash that very soon becomes available in the soil.

The analytical work was carefully performed by Professor H. A. Huston, Assistant Chemist.

FERTILIZER STATISTICS.

The primary object of the fertilizer law is to protect the farmer by informing him of the character and value of the goods purchased, but the records for the past two years also afford a means of estimating the total quantity of commercial fertilizers sold in the State. I have endeavored to compare this amount with the annual requirements of the farm, in order to gather profitable lessons for the future. The most costly constituents removed from the soil by farming are phosphoric acid, potash and nitrogen. The latter may be obtained indirectly from the atmosphere (as by turning in a crop of clover), but every pound of potash or phosphoric acid taken leaves the soil permanently just so much poorer, unless an equal weight of the same is returned.

The amounts of phosphoric acid and potash that may be supplied to farmers of Indiana has been estimated from the labels or tags issued by this office, assuming that each label is attached to a 200-pound package of the quality represented, but the figures are above rather than below the truth. There is an apparent decrease from 1884 to 1885; this is probably due in the case of phosphates to various accidental circumstances; for example, some of the tags issued in the former year were required to replace those destroyed by fire, and not actually used.

An estimate of the total quantity of these important constituents drawn from the soil annually in the State has also been computed. In each case of doubt the figures were so chosen as to give a result below the truth, rather than above it. The aggregate production of wheat, corn, oats, rye, barley, buckwheat, hay, potatoes and tobacco (exclusive of straw) was taken from the census of 1880, and these figures were combined with the known composition, to calculate the quantities of phosphoric acid and potash thus removed from the soil. In like manner, from the total number of horses, cattle, swine and sheep, with usual feeding standards, an estimate was formed of the mineral constituents consumed in the food of these animals. The results are given in the following

COMPARATIVE TABLE.

	Phosphoric Acid.	*Potash.*
Drawn from the soil by field crops	35,268 tons	34,689 tons
Consumed in feed of live stock	52,131 "	87,813 "
Furnished in commercial fertilizers in 1884	1,051 "	65 "
Furnished in commercial fertilizers in 1885	920 "	18 "

As expressly stated a year ago, it must not be understood that these large amounts are lost to the State, for the mineral constituents undergo a constant rotation from the soil through the plant and animal back to the soil again; the wheat, corn, hay, etc., are very largely consumed at home, and animals in pasture leave the undigested constituents of their food upon the ground. There must, however, be an inevitable loss by export and drainage, and I believe the following points to be clearly proved:

1. The present supply of plant food, as furnished to the State in commercial fertilizers, is insignificant as compared with the amount removed from the soil in field crops. It is probably but a small fraction of that which is exported in grain.

2. The artificial supply is likewise a very small part of that which is consumed by live stock.

3. The potash sold in fertilizers is utterly inadequate to maintain the fertility of our soils. In the eager demand for ground bones, the value of potassium compounds has been almost overlooked. The total annual supply is scarcely twenty per cent. of the amount clipped with the wool.

4. The greatest care should be taken to return all barnyard manure to the fields, not allowing the liquid portion to drain off into the streams. A waste of two per cent. of the matter discharged by our live stock would represent all the phosphoric acid and fifty to one hundred times all the potash sold in the State for fertilizing purposes, worth some two million dollars. The actual waste is more likely to reach ten or twenty million dollars annually.

5. Considerable importation of salts from the German potash mines will probably be needful within a few years, and may prove advantageous at once. In the meanwhile, wood ashes should be applied to worn fields, and when dry leaves are burned, the ashes are particularly valuable and should not be wasted.*

---

*The ashes of corn cobs are particularly rich in potash. A sample received from Mr. C. E. Mills, of Remington, Ind., was examined by Mr. W. A. Fankboner, who found 38.0 per cent. of potash and 3.5 per cent. of phosphoric acid. It is said that large quantities of such material are thrown away at grain elevators, where the cobs are used for fuel. Unless this is mixed with a large amount of coal ashes, it would be well worth hauling away to improve the soil. This ash sometimes fuses to lumps. It would be well to screen it before using, for a lump, gradually dissolving in a hill of corn, might be an over-dose, and kill the young plants. By mixing the ashes with earth, plaster or other materials, a better distribution over the soil could be secured. From 50 to 100 pounds might be applied to the acre, with very beneficial results. Information would be very gladly received of any experiments in this direction.

After the publication of the above paragraph, a year ago, an Eastern firm endeavored to introduce a fertilizer containing potash; but our farmers seem to have most confidence in the value of bones, and very little trial has yet been accorded in this State to the action of potash salts. It should not be forgotten, in this connection, that the chief source of this material is the *impure* potash salts of Europe; unless these have been carefully concentrated at considerable expense they may contain soluble salts of magnesium also, which may be hurtful when applied in excess.

As suggested above, a large quantity of potash is poured into our streams with the washings of woolen factories. This is combined with certain fats which have recently been widely recommended for pharmaceutical purposes under the name of lanolin. The manufacture of wool holds so prominent a place among the industries of the State, that if the combined value of the potash and lanolin should warrant their recovery, a very considerable saving could be effected in our agricultural resources.

The table of analyses is appended:

ANALYSES OF FERTILIZERS.

Number.	NAME OF FERTILIZER.	MANUFACTURER.	Per cent. of Water.	Per cent. of Soluble Phosphoric Acid.	Per cent. of Reverted Phosphoric Acid.	Per cent. of Insoluble Phosphoric Acid.	Per cent. of Ammonia.	Per cent. of Potash, Soluble in Water.	Value per Ton.	Number.
147	Raw bone superphosphate of lime	J. B. Jones, Louisville, Ky	9.95	0.83	5.67	10 05	3.14	.00	$31.34	147
148	Corn fertilizer	Robert B. Brown Oil Co., St. Louis, Mo	8.48	5.84	.21	1 26	3.91	.00	24.05	148
149	Excelsior phosphate	Struss, Astroth & Co., Louisville, Ky.	13.50	.45	4.56	7.69	2.55	.69	25.23	149
150	Bowker's superphosphate with potash	Bowker Fertilizer Co., Boston, Mass	18.05	8.84	.55	1.33	.00	1.63	21.96	150
151	Bowker's ammoniated dissolved bone	Bowker Fertilizer Co., Boston, Mass	21.57	7.47	2.01	1.78	1.70	1.08	26.74	151
152	Fine-ground bone	Thompson & Edwards, Chicago, Ill	4.60	.00	4.16	18.06	2.68	.00	33.59	152
153	Indiana sure-growth phosphate	Thompson & Edwards, Chicago, Ill	7.82	5.30	.82	10.34	2.15	.00	28.86	153
154	World of good raw bone superphosphate	Thompson & Edwards, Chicago, Ill	5.89	6.08	1.77	6.69	2.59	.00	29.80	154
155	Dissolved bone meal	Thompson & Edwards, Chicago, Ill	5.62	4.30	1.78	7.98	2.15	.00	26.13	155
156	National bone dust	Northwestern Fertilizer Co., Chicago, Ill.	16.46	5.54	1.85	3.70	2.55	.28	26.10	156
157	Twenty-six-dollar phosphate	Northwestern Fertilizer Co., Chicago, Ill.	17.43	5.32	1.25	4.31	1.70	.00	22.30	157
158	Prairie phosphate	Northwestern Fertilizer Co., Chicago, Ill.	18.18	5.47	1.42	4.26	1.79	.00	23.20	158
159	Challenge corn grower	Northwestern Fertilizer Co., Chicago, Ill.	12.28	3.95	3.95	3.15	2.17	.58	25.31	159
160	Ralston's bone meal	Northwestern Fertilizer Co., Chicago, Ill.	10.02	2.76	7.63	6.65	2.46	.00	33.28	160
161	Garden City superphosphate	Northwestern Fertilizer Co., Chicago, Ill.	17.20	5.82	1.67	3.95	2 34	.19	25.85	161

162	Fine raw bone	Northwestern Fertilizer Co., Chicago, Ill.	17.04	.00	8.15	14.80	4.34	.00	42.49	162
163	Soluble bone and potash	New Jersey Chemical Co., Philadelphia, Pa	13.75	7.44	1.64	1.65	.00	4.57	24.95	163
164	Button, bone	New Jersey Chemical Co., Philadelphia, Pa	13.03	3.04	4.55	3.85	2.55	3.41	29.86	164
165	Crop multiplier superphosphate	Geo. F. Brunner M'f'g Co., St. Louis, Mo.	7.94	7.51	1.79	2.52	2.68	2.65	31.98	165
166	Ammoniated phosphate	Indianapolis Fertilizer Co., Indpls, Ind.	12.55	.00	2.65	2.88	2.66	.17	15.33	166
167	Pure bone meal	Geo. F. Brunner M'f'g Co., St. Louis, Mo.	10.52	.00	7.99	14.14	4.08	.00	40.76	167
168	Bowker's superphosphate	Bowker Fertilizer Co., Boston, Mass	15.92	10.14	1.17	2.56	.38	.00	25.79	168
169	Gilead phosphate	Cincinnati Desiccating Co., Cincinnati, O.	12.37	3.23	5.70	5.26	4.00	1.32	35.56	169
170	Jarve's drill phosphate	Michigan Carbon Works, Detroit, Mich.	6.45	4.93	.97	5.53	1.66	.00	22.11	170
171	Raw bone meal	J. B. Jones, Louisville, Ky	8.40	.00	4.36	17.51	4.51	.00	38.89	171
172	Square bone	Cleveland Dryer Co., Cleveland, Ohio	8.92	2.97	4.08	8.03	3.87	.21	33.17	172
173	Buckeye superphosphate	Cleveland Dryer Co., Cleveland, Ohio	14.40	6.28	1.98	4.03	3.10	.34	29.86	173
174	Bone meal	Indianapolis Fertilizer Co., Indpls, Ind.	6.70	.00	7 29	7.88	4.28	.00	21.84	174
175	Raw bone	Indianapolis Fertilizer Co., Indpls, Ind.	7.55	.00	5.40	14.10	4.34	.00	36.84	175
176	Globe wheat fertilizer	Robert B. Brown Oil Co., St. Louis, Mo	12.20	3.85	.85	.14	5.36	.80	26.41	176
177	Ammoniated bone	E. Rauh & Son, Indianapolis, Ind	8.40	1.92	5.82	5.41	3.95	.00	31.57	177
178	Ammoniated dissolved bone	Central Chemical & M'f'g Co., Cin'nati, O.	6.90	.00	1.16	16.36	4.14	.00	43.47	178
179	Pure raw bone	P. B. Mathiason, Sons & Co., St. Louis, Mo	8.17	.00	4.76	15.87	4.45	.00	37.59	179
180	Pure raw bone meal	Astroth & Miller, Louisville, Ky	9.52	.00	3.37	18.25	4.70	.00	38.41	180
181	Excelsior bone dust	Common Sense Fertil'r Co., Louisville, Ky	16.50	1.14	4.71	8.69	3.23	.00	29.14	181
182	Excelsior phosphate	Common Sense Fertil'r Co., Louisville, Ky	21.75	1.73	3.93	9.69	2.13	1.67	28.61	182
183	Pure raw bone meal	Common Sense Fertil'r Co., Louisville, Ky	8.30	.00	5.31	16.42	5.20	.00	41.58	183
184	New standard fertilizer	E. O. Piles, Cincinnati, Ohio	10.22	4.57	.15	2.03	2.51	5.38	25.43	184

REFUSE FROM STARCH WORKS, FOR CATTLE FOOD.

Samples of "feed" and "gluten" from the American Starch Works, at Columbus, Ind., were examined in the chemical laboratory, with the results stated below.* The actual value of the various kinds of cattle food can be demonstrated only by feeding experiments, conducted with scrupulous care and accuracy. We may gain valuable information, however, in regard to the probable value of a given feed by chemical analysis; and for this purpose the determination of nitrogen is of special value, since the quantity of albumenoids (which contain about 16 per cent. of this element) is our chief criterion in judging of the value of any material designed for the production of flesh. The use of by-products in cattle feeding is especially recommended to increase the proportion of nitrogenous constituents in the ration.

OUTLINE OF MANUFACTURE.

In the manufacture of starch from corn, the essential steps in the process are as follows:

1. The shelled corn is steeped in water.
2. The grain while wet is ground between millstones:
3. The ground material is passed through a bolting device, whereby the coarse hull or bran is separated from the finer parts.
4. The finer parts are mixed with the proper amount of water and are allowed to flow over long, slightly inclined troughs or tables. The starch settles to the bottom and a milky mass floats off.

The hull or bran from the third step is the so-called "feed." It is the hull of the grain with a small proportion of adjacents parts. The milky mass of the fourth step is the "gluten." It contains a much greater percentage of water than the feed, and is less convenient for transportation by wagon; but these circumstances alone do not determine its value.

It is clear that the "feed" is likely to have a large proportion of cellulose, or the less digestible fibre, while the particles of starch that are not recovered by the manufacturer will constitute a large share of the gluten.

COMPARATIVE ANALYSES.

In the table of analyses, the percentage of water and of ash are stated for completeness, but the most important constituents are designated as "albumenoids," and "starch, fibre, etc." The percentage of the former is estimated by multiplying the nitrogen found by 6.25. The starch, fiber and the small amounts of fat were not estimated separately; but a given weight of the material thus designated is likely to be more digestible in the "gluten" (containing a larger share of starch) than in the feed which is characterized by the cellulose of the husk. The analyses of feed and gluten were made in our own laboratory. Other analyses are quoted below, from reliable published tables, for the purpose of comparison.

---

*These analyses and a portion of this paper are the work of my assistant, Mr. W. A. Fankboner.

COMPARATIVE ANALYSES.

	Water.	Albumenoids.	Starch, Fibre, etc.	Ash.	Ratio of "Albumenoids" to "Starch, Fibre, etc."	Approximate Cost per 100 lbs. of Dry Matter.
"Feed"	65.36	0.65	34.56	0.01	1: 5.31	$0.43
"Gluten"	86.89	3.67	9.05	0.37	1: 2.46	.20
Corn	11.29	10 50	76.93	1.28	1: 7.32	.81
Timothy	13.50	6.20	76.40	3.90	1:12.32	.75
Clover	14.30	11.00	68.30	6.40	1: 6.21	.62
Bran	10.91	16.28	67.22	5.59	1: 4.19	.71

The object of our investigation was to find the value of the by-products from starch works as flesh producers. The albumenoids are the most valuable of all nutrients; for from these alone can be built up the muscular fibre or other nitrogenous tissues of the body, while either the albumenoids, or the starch, fibre, etc., may contribute to the fat.

The term "nutrative ratio" is much used in discussions of fodder and feeding standards, to denote the relative weights of *digestible* albumenoids and *digestible* starch, fibre, etc. (making a correction for a supposed superior value for any fat that may be present). Thus, European authorities recommend a nutritive ratio of 1:12 for oxen at rest, or a ration containing about twelve times as much digestible starch, fibre, etc., as the digestible albumenoids; but for working or growing cattle a richer diet, with the ratio about 1:5 or 1:8, is recommended.

The experiments required to determine the digestibility of any given fodder for any given animal are very laborious and costly; we must, therefore, content ourselves by comparing the total albumenoids, etc., as in the table.

At the American Starch Works the "feed" sells for 15 cents per 100 pounds, or about 43 cents per 100 pounds for the dry matter which it contains. The "gluten" sells at 10 cents per barrel of 50 gallons, or (according to the sample analyzed) for only about 20 cents per 100 pounds of dry matter. The relative cost of several staples, calculated to dry matter, is given in the table, assuming the price of corn at 40 cents per bushel, timothy at $12.00 per ton, clover at $10.00, and wheat bran at 60 cents per hundred weight.

In view of the chemical composition, the "feed" appears to be the poorest, while the "gluten" has the best ratio of nitrogenous matter, though its value is diminished by the large quantity of water present. If the samples received are fair averages of these products, there is little doubt that the price paid for "feed" is rather high (since it contains so little nitrogen), while the "gluten" is actually worth far more than its selling price.

GLUTEN AS FERTILIZER.

A barrel of gluten, containing 14.9 pounds of albumenoids, would yield 2.35 pounds of nitrogen, or 2.85 pounds of ammonia. The value of the latter as a constituent of commercial fertilizers is estimated at about 15 cents per pound. Hence, if nitrogenous fertilizers are required for any special crop, the gluten would be worth nearly 43 cents per barrel apart from its value as cattle food. Farmers could well afford to pay 10 cents per barrel if the cost of transportation does not exceed 33 cents, provided that nitrogenous fertilizers are required, as for a spring application to wheat. The gluten (if thought best) could be applied directly to the soil; but most farmers would prefer to utilize it first for feeding purposes.

CONDITION POWDERS.

As certain kinds of patent medicines are prepared by wholesale and advertised to cure a great variety of diseases, so "condition powders" for horses are supposed to bring them from a poor to a healthy condition, whatever the cause of the ailment may be. It is clear that the remedy must be chosen with due regard to the disease to be cured, and if a compound includes some ingredients suited to each separate trouble, it must contain some that will aggravate the difficulty in any particular case.

It is stated, also, that many of the condition powders are made from poor drugs, which have been kept in stock until unfit for use. However this may be, my own attention has been directed to two prominent articles, well known to druggists, which have been *largely sophisticated for the express purpose of compounding horse medicines.* The facts are stated below.

BLACK ANTIMONY.

This name is given to a compound of antimony and sulphur (the common ore of antimony) in a powdered form. It usually contains a small amount of arsenic, which is carefully removed in the preparation of antimony compounds for human use. The black antimony often gives poor horses a sleek and fat appearance; the same result may be quickly secured by still smaller doses of arsenic; but both substances are poisonous, and there is no actual or permanent improvement to warrant the indiscriminate use of such powerful drugs. The condition attained is too apt to be unnatural, deceiving and transitory. This use of black antimony, however, led to the demand for something just as black at less cost, and the Pennsylvania coal fields were equal to the emergency. In fact, ground anthracite coal has a deep jet-like luster, exceeding the drug which it was desired to imitate, and marble dust was added to tone the color to a very dark grey. Nine samples of "black antimony" were purchased from druggists in various cities of Indiana, Ohio, Michigan and Illinois, which all proved to be utterly destitute of the substance claimed, while six samples from the cities of Boston, New York and Philadelphia were genuine. It is probable that adulterated drugs were offered for sale, and used in larger and larger quantities, until it was found that the substitute would sell just as well. One dealer defended his sales of coal dust on the ground that genuine antimomy "would kill all the horses in the country." I leave it to those who love their beasts to determine whether they desire to feed them upon coal dust.

SALTPETER.

Nitrate of potassium, or genuine saltpeter, has its uses in veterinary practice; but such quantities of horse medicines are put upon the market to meet so many different troubles that cheaper articles have been sought as substitutes. Of the substance sold under the name of saltpeter, and examined in the School of Pharmacy of Purdue University, one proved to be nitrate of sodium, or "Chili saltpeter," a second was rock salt, and a third was a mixture of both in the proportion of one part to three. It has been asserted that chalk is also used as an adulterant, but this has not come under my own observation.

CONCLUSIONS.

The fact that the articles described above are extensively sold in this State shows that there is a wide demand for spurious goods. If purchasers are eager to buy a humbug, some one will be ready to sell; but if intelligent care were used, our domestic animals might be saved many an indigestible and irritating dose.

WOMEN AS INVENTORS.

MRS. L. MAY WHEELER, INDIANAPOLIS.

Humanity is man and woman unified. Each is one and the same species, endowed with the same attributes. Each is capable of the highest cultivation and subject to the lowest degradation, and by creation, nature and capability man and woman are the equals of each other. And yet the world has failed to recognize this fact, because away back in its history, sometime, brute force predominated, and the weaker in physical strength were made the subjects of the stronger. Among this class were women.

Conditions of servility were inherited; slavery of one human being to another perpetuated, and the world has moved on and on until, at last, in the light of Christian civilization, advancement and knowledge has burst upon the ages, and we can see the clouds as they recede and read the history of the past through the white-edged rifts, and we are beginning to dimly realize that selfhood is godhood and humanity is a part of divinity.

In studying the past we find it has been prone to compare man's genius with woman's, and at the same time ignore the fact that there has been no call for the higher development of genius in woman; therefore, lesser development.

But now women are awakening to a consciousness of personal identity and realizing that the development of their native faculties is their highest duty, whereby they may rise to the level of man's genius, and become his complement in the arts and industries as well as literature and philosophy.

There have been times when the world seemed to feel as though man was its patentee and controller, and in reading the signs of those times we find them no credit to the inventor or ruler. To day the world lacks the unknown quantity latent in woman. Men are pondering over it. Women are beginning to realize this, and we can never solve the problem satisfactorily until this unknown quantity is brought to light; and no comparison between man and woman is possible until woman herself, by her own individual effort, wins the crown of personal endeavor. The possibilities of womanhood are but dimly realized. Durand says that "Faith spans the gulf of death with the bridge of eternal life." When woman attains to such a faith—faith in herself and her own inherent powers, then the world will lay its behests at her feet, and there will be no gulf to bridge, because it will have been abolished. It is Tennyson who says that "woman is lesser than man." I do not admit it. Woman is neither lesser nor greater. She is not man—man is not woman. Each is only one-half of humanity, but we find that one-half of this element have had much greater opportunity for development than the other. But, as we advance and become more enlightened, the world becomes conscious of the lack of counterpoise in that element of opposites represented by the sexes, and its need of it for the proper development of humanity and society. We are glad of this, because the world has persistently attributed to man the highest inventive qualities, and woman has been prone to accept it as a solid fact. Now that reasearch and patent office reports show that woman is not only possessed with fertility of mechanical resource, but qualities of mind capable of scientific culture, we are again made glad, because our brothers bow with deference to the deft hands and ingenious minds of their sisters. Women live in their feelings more than men, closer to nature than man, and this feeling actualized is the one rule and law of genius. The smallest things are often the greatest things in art, and attention to details, patient thought and study, and a restless curiosity regarding causes and effects are among the feminine qualities. No invention that is an invention has ever been achieved, or ever will be, except as the result of thought, formed into a practical thing in the mind. Mental activity, keenness of perception and strength of purpose are the energies by which great things are brought for from little, and in all of these requisites women are shown to be as strong as men.

You may say that inventions are the result of accidents, and inventive faculty is not the highest Granted; but the best opportunities possible are worthless without their appropriations by persons whose minds are capable of estimating the mechanical importance of the great and the small, the coarse and the delicate, and who can take in a multitude of fine particulars. Eli Whitney is said to be the inventor of the cotton gin, which is placed at the head of the great inventions of the age; but the records show that Catherine L. Greene, the widow of General Nat. Greene, of Revolutionary fame, is the originator and inventor of that piece of mechanism which revolutionized the industries of the South, the revenue of the nation and which wrought its web and woof around the world, which has been a model for all gins, or any parts of gins, made since, every one of which are eloquent of the inventive genius of woman.

Hers was like the mind of every true inventor. Eli Whitney became discouraged with the apparent failure of the first model, but she was not. Her mind was like a circle ever widening to take in more space, the center of which was steadily fixed, however, on the main point, and that was to effect a machine that would separate the seed from the cotton lint. A second draught was modeled, and her instructions were followed implicitly, which resulted in the construction of a machine the main points of which have never been superseded. Many ask why the glory of this invention was given to a man? We must not forget that this occurred ninety years ago, at the time when the unwritten law of custom forbade such an innovation by woman; so she was content to share with Whitney a pecuniary advantage in the manufacture of her own invention.

And, again, we are indebted to one of our foremothers for the invention of one of the necessities of life, that which forms a part of our industrial world, without which we would indeed become disintegrated, to a degree at least, and that is the art of making cotton thread. Mrs. Samuel Slater, of Pawtucket, R. I., was the originator of the manufacture of cotton thread, about one hundred years ago, manufacturing it from Sea Island cotton.

But women did not invent all of our older wonders, oh no! James Watt was an ingenious man. He wrought the prophecy of a strong steam engine which should do the business of nations. It may be if there had been no James Watt there would have been no railroads, and it may be if there had been no Mary E. Walton, the distracting sound of the elevated railway would have continued its deafening career until legislation had prohibited its use. Here you see exemplified the same characteristics of unique energy in both—he by making little electrical machines to experiment with, she in persistently riding on the cars from day to day; and the same curiosity in both; he not being content to know that his amateur engine, with a glass bottle for a cylinder, would go with the proper force applied, but he must understand the principle of the motive force; and so with Mary Walton, in seeking after knowledge, she would ride on the platforms of the cars much to the disgust of the conductors, untill she discovered the cause of the noise, then the curious glance was introverted, and she set about devising the scheme whereby the great enterprise should be a blessing to the millions instead of an incubus. Here we find something of the same genius which made the first boat which paddled itself up and down the Hudson, emanating from the feminine mind, however, instead of the masculine. Then again we find an example of high genius in the person of Mrs. Ann Manning, who invented the first mower and reaper, which must have sung a magical song to its inventor as its whizzings and whirrings sounded felicitously through the brain.

You may ask where you can find so great and ingenious a mind among women as Edison's? What of Mrs. Mary Mather, who, after long research and various experiments, perfected a deep-sea telescope, whereby the largest ships, lying fathoms beneath the surface, may be seen and explored without bringing them up to a dry dock. "Wrecks can be inspected, obstructions in navigation investigated, search for lost treasures, and in war times for torpedoes, successfully carried on, and immense sums annually saved through its means." We are lost in admiration as we think of the wonderful genius which made a telescope through which we could look into the stellar heavens. But is there not a greater genius required to perfect an instrument that will bring to view the depths of the ocean and tell us of the dwellers of that country beneath the sea? And a little Yankee woman did it.

Then let me tell you of Harriet Hosmer, who suffered contumely and contempt, no longer ago than '48 or '50, because she persisted in doing supposedly masculine things. She has not only carved her way to immortal fame, but has set the world agog by the discovery of a permanent magnet as a motive power. Scientific men are ready to bow in deference to the high genius which has given to the world such a result of thought and study.

While Edison has opened a new era in civilization, and made us to feel that it is a privilege, such as it has hitherto not been, to live here under the sun, and I dare predict that his inventions are but the prophecy of what the future will bring, and yet he has his counterpart in the woman whose research of fifteen years has brought to the world a power hitherto unknown.

Dr. Isabel M. Mitchell, of Chicago, is the original discoverer of the "Ozone method or purified-air process," that will keep perishable articles of food in their natural condition, so that they may be stored for future use or sale at some distant time or place. The benefit of this discovery to the commercial world can not be imagined. Ozone, as a preservative and sanitary agent, had been experimented with by chemists and scientific men, and still its production for the purposes of perfect preservation is due to the patient thought and study of a woman. We can not foresee what an element in civilization this discovery may prove to be, no more than could Mrs. Vanderplasse, who first began the manufacture and use of starch in England many years ago.

Do we ever think as we look at the ornamental work on public buildings, in artificial marble, that it was invented by a woman, Madame Dufillet? And every demonstrator of anatomy is indebted to Madame Ducondray for the manikins in use, and we are also indebted to women for many of the delicate surgical as well as the mathematical instruments now in use.

We find in studying our theme that women are constantly being found outside of lines in which we expect to find them, and among the archives of history we find the record of the wife of Chief-Justice Pickney of South Carolina, who first introduced the cultivation of rice into this country, personally superintending the first crops which were planted and harvested in the United States; and it is said that some of the machinery used in its manipulation is the result of her ideas, just as the mechanical cotton-picker is the invention of Mrs. Emily V. D. Miller, of Vicksburg, Miss., and many a man and woman will bless the inventor of this improvement on nature, because cotton-picking is said to be very hard on the fingers.

And again among the useful industries we find woman is the originator of what is known as the "squeezer," the "coffee mill squeezer" used in puddling mills. This also wrought a change and opened a millennium of easy labor to weary human toilers.

In just twelve years after Betsy Metcalf made the first straw bonnet manufactured in this country, Massachusetts alone had produced half a million dollars' worth of straw goods. The Burden horse shoe machine, which turns out a horse shoe every three seconds, is the invention of a woman, and one that has saved millions of dollars to the public during its use.

Women have seen the need of practical improvements in the way of stoves and their attachments, and a number of foundries owe their success to the genius of woman applied in this way.

Sometimes it is wondered why woman did not invent the sewing machine. Olive Healy has originated a light-running machine on different principles from others in use, and many of the attachments and improvements adapting the machines for sewing leather and other thick substances, and an attachment for threading a machine upon full run, and a complete machine that is quite universally used by boot and shoe manufacturers, are all the inventions of women. Madame De Long, of England, has perfected an ingenious machine operated by steam, which cuts the hardest and softest metals, so that a tiny pin or a solid, massive metal bar can be produced without any molding or filling. Mrs. M. H. Semple, of Lowell, Mass., has perfected one of the most practical and successful inventions, known as the Semple Cutter, and is used in book binderies in many of the principal publishing houses of the United States.

There are more than a thousand machines in the world, for each one of which some woman is finding in its coarse intonations a sweeter melody than can be caught from the finest harp. Men and women are scattered over the land who could tell you that the satisfaction of living was derived from the hum and inspiration of machinery. None of us are indifferent to the singing of the old shops. There is something eloquent in the clicking and clattering of whirling wheels. There's a charm about them. And I doubt if there's one present who can not remember the old saw-mill, or the old corn-sheller, and the time when you went out of your way to see a train of cars, whose shrill whistle and thundering chariot-wheels had from the distance tapped at your ear-drums, or the sound of the threshing machine had power to beguile a long way. And you remember, gentlemen, how, as boys, you made a little wheel and put it under the edge of a mimic mill-dam, and then felt like shouting loud enough to be heard around the world as you saw the little artificial water bird go swinging round and round, with its soft flappings. I can remember how happy I was in making buzz wheels, and pulling at them, and then how we girls and boys used to make joy fiddles out of corn-stalks, and whistles out of pumpkin vines, and expressed our young rapture on mouth harps formed by placing paper over combs, and I doubt if a woman can be found with the organ of constructiveness moderately full who did not pass her early life with the love of noise and a charm for machinery.

We, nor any others, can know all of the life-long experiences of the many who have made new things or inventions in their day. It is not for you nor me to know all the names of women who have clapped their hands for joy over useful things wrought out by them. There are many inventions whose authors have no nominal personality in written history. Like the pyramids along the Nile—and the third one is supposed to be the work of Queen Nitocris, the last sovereign of Manetho's sixth dynasty—they tell of the power of genius, but are dumb when asked for personal histories. Tradition tells us it was Isis who taught the Egyptians the art of bread-making, and how to convert roots and grains into cooked food, and the manufacture of textile fabrics out of flax, and the art of healing and preparing medicine and embalming the dead. Grecian mythology teaches that it was Minerva who invented the mechanical industries of the world and the various agricultural pursuits by being the originator of agriculture and mechanics, and in Chinese annals we read that spinning was invented by Yao, an emperor's wife, and the Empress Si Ling Chi was the discoverer of silk, and invented processes of its manufacture. And the great variety of lace-making and gauzy fabrics, which have brought untold wealth to us, are all the product of woman's inventive genius. We can trace this same power back to the wild women of the woods, and it may be that the primitive oar-propelled canoe and bow and arrow may have been suggested by them, because it is certain that the multiform and curious ways of sewing garments and blankets, with thorns for needles and withes and tenacious vine for thread, and the beautiful designs of bead-work, the medicinal effects of roots and herbs, the thousand and one forms of basket and wicker work, cooking utensils, pots, pipes and matting are all represented as the work of the industrious and ever-burdened squaw.

And where are the names of the thousands of wives and mothers whose fertility of resource and inventive ingenuity have blessed the world in things that are pleasant to the eyes, useful to mankind, and whose genius has shown itself in the art and science of home-making and household economy? Their work is not patented, their names can not be found upon the great books at Washington, and yet we are taught by the homes and industries of our State, by the woman's departments in town, county and State Fairs, that it requires the same patient thought and study and the same power for genius to produce all that we find in these lines as well as the most wonderful invention in the world, and there is something we may know in regard to the unrecorded personal life which is concerned in every ingenious thing in this world, whether it is of little or great import, and that is the story of some soul passing the period of the happy consciousness of having lived for a purpose. Clustering all along the milky way of history, past or present, are unnumbered geniuses whose products shine out distinctly, but so thickly that their personalities are almost lost in the shining way. We have this to console us, that she who has been useful to her race will live on in her works even after the brain has ceased its convolutions. In some parts of the ocean there are bold reefs, and long-reaching islands and continents even, which are the result of the life energies of certain small and short-lived animals called corals. The operation by which these structures have been produced have been found to be a constant, and never-ceasing work, during the term of their brief existence. While they lived they worked well, and after they were dead, their works remain to tell the story of their industry. It would seem that a forcible analogy can be drawn between the productive minds of men and women and these small builders of reefs, islands and continents.

Civilization is but the work of the busy corals of our race, and down through the ages and up through the waves of time, they have been working and working, building first in different parts of the earth and now in our "new world." We have a nation, States, cities and towns; agricultural, industrial and manufacturing arts; applications of horse-power, steam-power, water-power, wind-power and lightning-power—these are the material substances of civilization; these are the lasting remains that bear the ineffacable marks of skillful fingers, warm with mortal flesh, which have been seen carving out the products of ingenious minds.

The white, deft fingers of woman have traced her immortal influence in every line and structure of our material world, and the sturdy arm of man is the complement to the whiter and smaller hand, and the two must forever stand as equals in the work of nations, and we know that wherever useful inventions go, with them goes something of a human brain—of the same brain which has gone with them since the hour of their origin, and man and woman are thus immortal; and she who wrought the first silken fabric or the first loaf of bread and he who made the first compass have lived on and on in what their hands have wrought. Ten thousand times ten thousand were the perpetuators, the emblems, the imitators of their minds, for everything that was modeled after those things, whether by the skillful fingers of the first, second, tenth or one hundredth generation after their own, that silken cocoon, that bit of baken bread, that mariner's compass was a story of her genius, her thought and his joy. An omnipresence always, something to be talked about down to the end of time.

It is impossible for me to enumerate all of the inventions of women, or give the names of all who have received patents during the past twenty-five years. The range is so wide and so diversified that it would be impossible to tell even the line of mechanics to which the feminine mind seems best adapted, because it is by no means confined to crazy quilts or worsted work, pickles and preserves. Among recent inventions by women, are—"a spinning machine, capable of running from twelve to forty threads; a rotary loom; a volcanic furnace for smelting ore; an improved wood-sawing machine; a clothes mangle; a chain elevator; screw-crank for steam ships; a fire escape; a wool feeder and weights, very valuable in woolen manufactures; a self-fastening button; a portable reservoir for use in case of fires; a process for burning petroleum in place of wood and coal for steam generating purposes; an improvement in spark arresters, to be applied to locomotives; a danger-signal for street crossings or railways; a plan for heating cars without fire; a lubricating felt for subduing friction; a rapid change box for use at railway stations and ferries, invented by a girl of sixteen; syllable type with adjustable cases and apparatus; machine for trimming pamphlets; writing machine; signal rocket used in the navy," all of which show that women appreciate the needs of the world and have practical ideas in attempting to meet them, and it shows that the spirit of genius and ingenuity is not confined to one sex, and that woman as well as man draw their inspiration from ocean, earth and air, and make old mother nature tributary to their mutual happiness.

Every month finds from one to twelve women taking out patents on something useful or ingenious, yet we need not visit the Patent Office to see all of the marvelous works about us, and it is safe to conclude, that as the past only preludes the future, that inventions are yet to startle the world, and those now in use will be laid aside and their places supplied by improvements far beyond anything at present known. And as there is a steady widening of the field of woman's opportunities and work, we do not doubt her ability to grasp it, nor that she will fail to find the latent genius God has given her; then the world will awake to the fact of the opening of an era of the absolute manhood of man and womanhood of woman, and equal justice for both.

INSECTS AFFECTING THE CORN CROP.

BY F. M. WEBSTER.

Mr. President, Ladies and Gentlemen:

From the time the farmer consigns his seed grain to the soil until the crop is not only harvested but comes upon his table in the form of palatable food, or is otherwise disposed of, it is largely at the mercy of noxious, and under the protection of beneficial insects.

As it is beyond the limit of this paper to follow other than destructive insects, one illustration will be sufficient to indicate how little we know of the conflicts that go on about us, even when our financial interests are hanging in the balance.

In the month of June, some two years ago, I visited at early dawn a field of wheat that was infested by the wheat midge. The maggots were abundant on the heads of grain, depredating on the young kernels. But running about, up and down and over the wheat heads, were also numbers of lady beetles (*Coccinellidæ*) and soldier beetles (*Telephoridæ*), thrusting their heads into every nook or opening between the kernels, or, if a slight breeze exposed some heretofore protected part, it was at once explored, and if a midge larva was found within reach it was quickly dragged forth and devoured. This feature was observed continually for several mornings, and in all probability averted serious damage, not only to the quantity but to the quality of the grain. I was amused, however, during the following autumn to hear the owner of this field remark to a group of listeners, that it required only skill and good farming to raise a good crop of such wheat as he had just marketed.

In connection with this it may be proper to state that insects affecting corn, as well as those affecting wheat, have their natural enemies, and however faithfully we may plow and plant, without the aid of beneficial insects and birds, much of our labor would be in vain.

AFFECTING THE SEED AFTER PLANTING.

THE SEED CORN FLY.

(*Anthomyia Zeæ*, Riley.)

Plate I, Figs. 1, 2.

Anthomyia Zeas Riley: 1st Mo. Rep., 1869, pp. 154-56, figs. 86, 87.
Anthomyia Zeas Walsh: Am. Entomologist, i, 1869, p. 224.
Anthomyia Zeæ Packard: Guide Study, Ins., 1869, p. 411, fig. 344.
Anthomyia Zeæ Glover: M. S. Notes, Jour. Dipt., 1874, p. 3, pl. 8, fig. 26; pl. 9, fig. 33.
Anthomyia Zeæ Riley: Gen. Ind. and Supp. Reports, Ins. Mo., 1881, p. 89.
Anthomyia Zeas Ost. Socken: Cat, Dip. N. A., 1878, p. 168.
Anthomyia Zeæ Lintner: 1st Rep. State Ent., N. Y., p. 199-201, figs. 55, 56.

Soon after the seed corn has become swollen in the ground, it is attacked by a small, yellowish-white, footless maggot, about one-fourth of an inch long, blunt at the posterior, and pointed at the anterior extremity.

This maggot feeds upon the substance of the kernel, and soon reaches maturity' when it contracts to a light brown puparium, from which, in about two weeks, there emerges a small, pale, yellow-brown ash-colored fly.

The insect was observed first by Mr. A. S. Fuller, in New Jersey, in 1868. I have found them in Illinois, and they were reported in the vicinity of Lafayette, Ind., last spring. Although it has never proven very destructive, the capabilities of the insect in that direction can only be surmised from the habits of other and allied species, one of which is the notorious onion maggot, and it is mentioned here, as a species liable to occur in destructive numbers at any time.

Remedies.—Should the pest occur for a series of years in succession, the remedial measures would probably consist of mixing some substance like tar or kerosene with the seed before planting. But at present the damage precedes our knowledge of the presence of the depredator, and hence it is difficult to suggest a practical remedy.

ANTS.

I have observed a small yellow species, *Solenopsis fugax*, excavating and carrying away portions of the seed kernels after they had sprouted. Years ago I observed, upon recently broken sod, others, larger, but of a species that I can not now remember, burrowing down through a thin covering of earth, in order to reach a kernel of seed corn. As we shall endeavor to show further on, ants congregate about *young corn* for an entirely different purpose. At the same time, it can be proven that just before, or even just after the kernel has sprouted, it is sometimes actually attacked by ants, particularly if only lightly covered.

WIRE WORMS.

Elateridæ. Species, various.

Plate I, Figs. 3, 4, 5.

[NOTE.—The species are so confused and the references so numerous that I append only the more important.]

HARRIS: Inj. Insects, 1852 (Ed. by Flint, 1862), pp. 51-57.

FITCH: 11th Rep. Ins., N. Y., 1866, in Trans. N. Y. St. Agl. Society, 1866, pp. 519-543.

THOMAS: 1st Rep. St. Ent. of Ill., 1876 (Ill. St. Dep. Agr., vol. 14), pp. 21-32.

HARRINGTON: Rep. Ent. Society, Ontario, 1879, pp. 77-84.

These are the larvæ of our common snapping beetles (Elaters), or "neck-breakers," as the Indians term them, of which there are very many species.

Henshaw's list of the Coleoptera of North America, north of Mexico, published in 1885, gives the names of 516 species. Of course the larvæ of all of these are not injurious to corn, but the number that do affect that cereal seem to have taken upon themselves the duty of making up in amount of damage for any deficit in the number of species. These larvæ and their method of attacking the seed after planting are too familiar to need any description.

Although the habits of these insects have been studied by Swedish, British and American entomologists within the last century, we have made slow progress in gaining a full knowledge of their life history, or devising means to combat them. It seems to be generally conceded at present, that the insects require from two to three years to complete their transformations, the adult beetle emerging in the autumn of the third year.

It is also noticeable, that these worms are excessively abundant only in fields that have been quite recently devoted to grass. Hence, it is the first crop, taken from land that has lain for a long series of years in meadow or pasture, that suffers the most seriously from their ravages.

Remedies.—We have yet to learn of a thoroughly effective remedy for the pest, that will stand the test of practical utility in the extensive corn fields of the American farmer.

In Europe, where farms are small and labor cheap, the worms are collected either by digging out, or by placing pieces of sliced potatoes in the ground, and as these attract the worms they are frequently examined, and thus considerable numbers are trapped and afterwards destroyed. This, however, is a worthless remedy for us, and, while soaking the seed in poisonous liquid may be practiced with good results where the corn is planted by hand, it will be found impractical where the work is performed with the ordinary corn planter. Soaking the seed in kerosene will not cause to it swell, and it may remain in the fluid for 36 hours without injury to the germ. But whether the roots and shoots would be protected from the worms, or whether the growth of the former would be in any way affected by the soaking of the kernel, I am not now able to say. Soaking the seed in copperas water and other similar mixtures may prevent the worms from working upon the kernel, but will not prevent their eating the tender shoot, or young roots.

Fall plowing has been urged as effective by some farmers and denounced by others, as has also early and late plowing in spring.

The only effective remedies known are sowing buckwheat on the infested field for one season, or letting the field remain fallow for the same length of time, neither of which will find favor except in extreme cases.

We have some remedial measures to suggest, which, though not new, except, perhaps, with reference to their combination, are nevertheless worth a trial.

Let the sod be broken to the depth of three or four inches as early in the fall as possible—if in August so much the better—leaving it as uneven and as much exposed to the sun and winds as possible. In the spring cultivate and harrow occasionally, but do not plant until the latter part of May.

The object of plowing in early fall is a two-fold one. First, to expose the roots of the grass to the dry, hot weather, and thereby destroy, as far as possible, all vegetable life; and second, to expose many of the worms to the attacks of birds before they migrate. The cultivation in spring is a simple carrying out of the plan, by destroying any roots that may have survived the winter, keeping down any vegetable growth that might otherwise afford food for the worms, and exposing these as frequently as possible to the attack of insectivorous birds on their return; as each time the soil is disturbed it brings to light some worms that had previously escaped, and, besides, increases the possibility of starving others. For, while these wire worms can survive without food from August until April, it is doubtful if they can continue on in this way until June.

If it is urged that these measures necessitate too much labor to carry them out, we reply that not only wire worms but cut worms and white grubs invariably occur in such fields in greater or less numbers, their presence having been brought about by precisely the same conditions, and, while we are ostensibly fighting wire worms, we have, in reality, grouped together three of the most destructive pests of the farmer, and are treating them as one and by the same remedy.

The shorter the time fields are kept in grass the less number of these worms will be found to infest them, and hence, rotation of crops at short intervals will do much toward keeping their number reduced.

AFFECTING THE ROOTS.

The Corn-Plant Louse.

(*Aphis maidis*, Fitch.)

Plate I, Fig. 11.

Fitch: 1st, 2d Rep. Ins., N. Y., 1856, pp. 319-20.

Walsh: Proc. Phil. Ent. Socty., 1863; Trans. Ill. St. Agl. Socty., 1865, pp. 491-97.

Thomas: Bull. 2, Ill. St. Lab. Nat. Hist., 1877, p. 12; 3d Rep. Stat. Ent., of Ill., 1878, pp. 89-91.

Boardman: Stark Co., Ill. News, 1882.

Forbes: 1st Rep. St. Ent. Ill., 1882, pp. 41-4; 2d Rep. St. Ent. Ill., 1883, pp. 46-8.

Popenoe: 3d Bienn. Rep. Kan. St. Bd. Agr., 1883.

Garman: 14th Rep. Ins. Ill., 1885, pp. 23-33.

Many farmers, on going over their fields after the corn is well up, have observed numbers of ants swarming about the young plants, and have more than once accused these of injuring the crop. The truth is, however, they have at this time no interest in the corn, but are the attendants of a small, pale-green aphis, or root-louse, which destroys the young roots by puncturing them and extracting the juices. The ants collect about the aphis, otherwise known as ant-cows, for the purpose of securing a liquid known as honey-dew, which exudes from their bodies.

The aphis will be found in clusters on the roots of the young corn, of all sizes and almost invariably wingless, their pale-green color disguised beneath a covering of whitish, mealy substance resembling flour. In what manner they become distributed over the fields, and how they first make their way to these roots, are questions yet unsolved; but as the little brown ant, *Lasius flavus*, is an almost constant attendant upon them, and has been observed, both by myself and others, to transport them about, it seems not improbable that they should be, at least in part, responsible for their diffusion. This seems all the more likely to be the case, as other species of ants are known to not only place aphides in desirable locations, and herd them as we would so many cattle, but they also take them to their homes in the fall, and, after caring for them through the winter, place them on suitable plants in the spring.

Late in the summer great numbers of a dull-black and green aphis will be observed, with its numerous progeny, infesting the leaves, husks and tassels. These are very unlike those observed attached to the roots in spring, yet they are the same pest in a different form. It was this above ground form that was first observed and described by Dr. Fitch, State Entomologist of New York, in 1856, and it was not known that the insects clustering upon the roots, and feeding on their juices in spring, were identical with these until 1862, when Mr. B. D. Walsh, of Illinois, found and described them, establishing the fact of their connection by breeding the form found on the stalk from those infesting the roots.

Since this time but little additional knowledge has been gained with reference to the relation of the two forms to each other, nor do we yet know how far their distribution and consequent destructiveness may be due to the protection of ants.

Remedies.—The fact that the insect affects corn on both old and new lands gives little encouragement of relief by a change of crops. Topical applications, even if otherwise practical, would be difficult to introduce about the roots of the corn. Besides, if the presence of these plant-lice is due to the protection of ants, these insects would, doubtless, at once move them to safer quarters.

While only the edict of a President was necessary to banish the herds of the cattle-kings from the domain of the Indian, should the little brown ants choose to pasture their cows in our cornfields, that official, with the entire diplomatic service at his back, would, with our present knowledge of the case, find himself unable to afford us much relief.

The Corn Root-Worm.

(*Diabrotica longicornis*, Say.)*

Plate I, Figs. 6, 7, 8, 9, 10.

Galeruca longicornis SAY: Am. Ent. Ed. by LeConte, Vol. 1, p. 223.

Phyllobrotica longicornis WALSH: Pract. Ent., Vol, 2, p. 10, 1886.

Diabrotica longicornis CROTCH: Check List Col., N. A., p. 98, 1873.

Diabrotica longicornis RILEY: Rep. U. S. Dep. Agr., p. 208, 1878; Am. Ent., Vol. 3, p. 247, 1880.

Diabrotica longicornis FRENCH: Prairie Farmer, Aug. 14, Sept. 4, Sept. 18, 1880; 11th Rep. St. Ent. Ill., pp. 65-72, 1881.

Diabrotica longicornis THOMAS: 10th Rep. St. Ent. Ill., pp. 44-46, 1880.

Diabrotica longicornis WEBSTER: Home and Science Gossip, Sept., 1881; Am. Nat., Vol. XVI., p. 514, 1882.

Diabrotica longicornis FORBES: Prairie Farmer, Dec., 1882; 12th Rep. St. Ent. Ill., pp. 10-31, 1882.

Diabrotica longicornis OSBORN: Bull. 2 Iowa Agl. Col., pp. 61-69, 1884.

Of the numerous insects more or less seriously affecting the corn crop, the corn root-worm is probably the most pernicious. Other destructive insects do their work and leave the field, but in the case of the one under consideration we may look for its recurrence after the third or fourth crop about as confidently as we may for corn itself after planting.

Although the damage caused by this insect is pretty general throughout the corn belt of the States of Iowa, Illinois and Indiana, comparatively few farmers are acquainted with the nature of the pest and still less understand the ease with which its ravages may be controlled. Like all insects its period of existence is divided into four epochs, or stages, viz: the egg, the larval or worm, the pupal, during which it requires no food, and the adult. Although in this case it is injurious in but one, the larval, stage, nevertheless it is virtually the same enemy throughout them all.

The adult is a small, rather robust, green or greenish-yellow beetle, about one-fifth of an inch long and about half as broad. Few farmers can have failed to observe these, at any time during the last of August, all of September, and the first part of October, flying about among the corn, usually alighting upon the silk, upon which they feed. Outside of the corn fields, they often congregate upon the blossoms of clover, thistles and golden rod, but showing little of a migratory nature.

During October the females descend into the crevices of the earth about the roots of the corn, and there deposit a large number of minute, dingy-white eggs, which to the unaided eye, resemble minute grains of light-colored sand, after which they soon perish. These eggs remain in the ground until the following June, at which time the fibrous roots of the young corn (supposing that to be the crop) form almost a complete network in the soil. On first breaking forth from the eggs, these worms are, as a matter of course, very minute, but they are very active and soon find their way to tender, fibrous roots. These they devour, gradually working toward the main roots. The more tender extremities of these are also eaten, but as they grow larger, the worms excavate parallel channels in them just beneath the surface.

---

*Extracts from this paper have already appeared in the columns of the *Indiana Farmer*.

If the affected roots are examined at this time, the worms will frequently be observed at work, as illustrated in Plate I, Figure 9. By this time the worms are full grown, and are about four-tenths of an inch long, and rather thicker than a large cambric needle, smooth, white, with the head a yellowish brown. They reach this point in their developement during July and August, when they crawl a little to one side and by working their bodies about construct a small cell in the earth, where in a few days they transform to pupæ.

They have now cast off their worm-like appearance, and more closely resemble the adult. They are now shorter, being about one-eighth of an inch long, much more robust, and of a pure white color throughout. Just how long they remain in this state is not known, but by the middle of August nearly all the pupæ have transformed to adults, and these have made their way upward out of the ground and are congregated upon the silk and tassels of the corn, living over the life of their progenitors.

The insect is a blood relative of our common striped cucumber beetle, *Diabrotica vittata*, and while by no means a new species, having been described in the year 1823, our record of its depredations upon corn commences in the year 1874, when it was reported to Prof. C. V. Riley, by Mr. H. Webber, of Kirkwood, Missouri. In 1878 Prof. Riley's attention was again called to the insect, by complaints of similar ravages in the fields of Mr. Gustavus Pauls, of Eureka, Missouri. And his notice of the fact, in his letter of transmittal accompanying his report as United States Entomologist, for the year 1878, is the first published notice we have of its destructive nature.

Nothing further was published regarding the insect until 1880, when Dr. E. R. Boardman, of Stark County, Illinois, found the corn in his vicinity being destroyed in July by a small, white worm, eating the roots. Examples were forwarded by Dr. Boardman to Prof. G. H. French, of Carbondale, Ill., at that time Assistant State Entomologist, who succeeded in rearing the adults from the worms sent, thereby bringing the insect again to the front.

Prof. French gave the results of his own and Dr. Boardman's studies in a series of letters contributed to the *Prairie Farmer* during August and September, 1880, but his official report did not appear until 1881.

The close relation between this and the striped cucumber beetle very naturally led these gentlemen to anticipate a corresponding similarity of habits. Hence, Prof. French inferred that there were two or more broods in a season; that the insect passed the winter in the pupal stage, and appeared in the spring as an adult. From these premises, he reasoned that if these adults found a clean field, with only the young corn as prospective food, they would largely emigrate; whereas, if the ground was overgrown with grass and weeds, they would be more apt to remain and deposit their eggs. And, as the radical difference between their numbers and amount of damage in old and new fields had been noticed, he was led to suggest clean culture and a rotation of crops as likely to prove nearly equally valuable remedies.

In the year of 1882, there having been a change in the office of State Entomologist of Illinois, resulting in the appointment of Prof. S. A. Forbes, I was myself employed in the capacity of Assistant Entomologist; and, having previously given the insect considerable study, was assigned the duty of solving the problem of its life history, and, if possible, devising some practical method of destroying them in the corn fields.

By carefully watching them through the summer, in which I was aided by Dr. Boardman, by visiting personally or communicating with the owners of fields under every possible variation of cultivation or previous condition, by watching the eggs from the time I first found them, on the 18th of October, until the ground was frozen in November, by frequently finding the lifeless body of the female in the midst of these eggs, I was enabled to demonstrate beyond a peradventure that the insect was single brooded, the larvæ from these eggs being those found about the roots of corn in July, and that a rotation of crops alone was the practical and thoroughly effective remedy.

When I came to Indiana in 1884, I was not surprised to find these worms in great abundance about the roots of corn, and later in the season these same fields were literally overrun with adult beetles.

Almost every farmer had observed the beetles, a very few the worms about the roots of corn, but no one suspected that the two were in any way connected. And it is probably true that there are less than half a dozen men in the State to-day that have any idea of the amount of damage caused by these insects.

If we examine a large number of fields we shall find all degrees of injury, from a hardly perceptible to an almost total loss. Where the soil is rich, a good growth of stalk will often be made, but the ears will be short and poorly filled out at tips. Serious damage of this sort is often overlooked, or attributed to dry weather, soil, culture, and the whole et cetera of misfortune, when it is really due to the amputation of the roots by these worms. Fields that would otherwise yield 50 bushels per acre are in this way reduced to 40 or perhaps 35, and the cause thereof is never known. As might be expected the injuries will be much more apparent on old, worn-out soils, but I have examined many fields where the soil was exceedingly rich, and, while an ample growth of stalk had been put forth, the ears were dwarfed, and the roots so badly eaten that the stalks themselves were toppled over by every unusual gust of wind, and by September were lying flat upon the ground, dead and dried up. As a rule, however, rich or low undrained soils escape with the least injury.

Last July I visited the farms of Mr. Moses Fowler, in Benton county, in company with the owner and his superintendents. There were at this time about 10,000 acres of corn on these farms, and I could not see any difference, either in culture, condition or environment, between these and the thousands of other fields throughout the corn belt of the Western States. A day was spent in the careful examination of these fields, and I am confident that Mr. Fowler and his foreman, Mr. Van Natta, are as competent to distinguish the work of this insect as I am myself, and much more capable of estimating the probable damage to the crop.

Recently, and since the corn was gathered, I met Messrs. Fowler and Van Natta in the bank parlor of the former, in Lafayette, and received from them an estimate of the average probable loss to the entire crop on these 10,000 acres, which estimate was made for me at my request. The loss was estimated at 15 per cent., or, at 30 cents per bushel, the market price at that time, nearly $16,000, Mr. Fowler, who had in the summer roughly estimated his loss at from $10,000 to $12,000, remarking that the estimate given me was, if anything, too low, as some fields were injured at least 75 per cent.

On the basis of this estimate the damage to the corn crop throughout the State during the past season, by reason of the work of this insect, would amount to over $5,000,000.

But there are many localities in the State where wheat is the principal crop, and as the greater acreage of small grain sown would indicate more of a tendency to rotate crops, thereby reducing the amount of damage in a proportionate degree, it would be improper to estimate the amount of damage on the same basis throughout the entire State. Hence I have selected twenty-four counties from sections of the State where corn is the chief product, and taking the acreage, kindly furnished me by your Secretary, Mr. Heron, and the estimates of Mr. Fowler as a basis, we have the amount of loss in each of these counties, which I think is approximately correct:

Benton, $118,000; Boone, $87,000; Clinton, $83,000; Delaware, $76,000; Fayette, $40,000; Fountain, $69,000; Grant, $79,000; Hamilton, $83,000; Hancock, $65,000; Hendricks, $75,000; Henry, $84,000; Johnson, $73,000; Marion, $78,000; Miami, $63,000; Montgomery, $83,000; Newton, $63,000; Parke, $73,000; Randolph, $92,000; Rush, $95,000; Shelby, $97,000; Tippecanoe, $124,000; Vigo, $84,000; Warren, $65,000; Wayne, $85,000. Giving a total loss in these twenty-four counties of $1,914,000.

Remedies.—If we carefully study the life history of this insect, we can not fail to note that at the time the young worms hatch from the eggs, an immediate supply of food, suitable for their condition, is absolutely indispensible—if withheld for even a few days they must necessarily perish of starvation. We find that at the time a generous supply of suitable food is required, the roots of any small cereal grains are by far too woody and tough to succumb to the jaws of the tiny worms, or afford them requisite nourishment. Not only has the truth of this been practically demonstrated, but also, that owing to the non-migratory habits of the adults, it will require several years for them to acquire sufficient numbers in the field to become seriously injurious.

Thus a simple change of crops, for a single season, from corn to either wheat, oats, rye or barley, becomes not only a thoroughly effective remedy, but also one of practical utility. It is a remedy that has, to my personal knowledge, been thoroughly tested by farmers who not only pride themselves on the number and extent of their estates, but also on their management, and I have yet to learn of a single instance where it has proven unsatisfactory.

Heretofore it has been supposed that the first crop of corn on grass or clover sod, whether of pasture or meadow, would be exempt from the attack of these worms. In fact, I have never, myself, observed any damage whatever in new fields from this cause. But I have recently received information, both from farmers in Indiana and Northern Illinois, which leaves little doubt that the first crop of corn on clover sod is often seriously injured by these worms. This somewhat novel feature of the case may, perhaps, be accounted for by the fact that the adults are attracted to the clover fields in the fall by the bloom of the second growth, and doubtless deposit their eggs in the soil. Should this be the case, it will be necessary to prevent the second growth from blooming in a field during the fall previous to a change to corn.

THE WHITE GRUB.

(*Lachnosterna fusca*, Frohl.)

Plate II, Figs. 7, 8.

Melolontha fusca, FROHLICH: 1792.

Phyllophaga quercina, HARRIS: Ins. Inj. Veg., p. 30, 1852.

Lachnosterna fusca, FITCH: 3d Rep. St. Ent. N. Y., Trans. St. Agricultural Society, 1856, pp. 368-75.

Lachnosterna fusca, GLOVER: Rep. Dep. Agr., 1868, p. 88.

Lachnosterna quercina, RILEY: 1st Mo. Rep., 1868, pp. 57-67; *fusca*, Ind. and supp. to Mo. Reps. 1881, p. 53.

L. fusca, THOMAS: 5th Rep. as St. Ent. Ill., 1876, pp. 97-98; Trans. Ill. St. Dept. Agr., vol. 14, 1876.

L. fusca, TREAT: Inj. Ins., 1882, pp. 73-78.

L. fusca, SAUNDERS: Ins. Inj. to Fruits, 1883, pp. 212-15.

This insect is among our earliest described species, and its eminently destructive habits have been so marked that a full list of references would require more space than is at my command; hence, I have given only those which will afford the farmer or student the greatest amount of information and probably be the most accessible.

The majority of the people are aware of the fact that the well-known white grubs are the larvæ of the common May beetles, and are too well acquainted with the grub itself to require any description.

The beetles appear in May or June, and soon after pairing the female enters the earth to the depth of a few inches, where she deposits forty or fifty eggs, after which she soon dies. These eggs hatch in about a month, the larvæ, of course, at first being very small, and hence we see nothing of their work the first year.

During the second year they work near the surface, leaving us no longer in doubt of their presence, and reaching their full growth during the spring of the third or fourth year.

Like wire worms, they are the most abundant in old grass lands, frequently doing considerable damage to pastures and meadows, and when such fields are plowed and planted with corn, the first crop, and sometimes the second, suffers seriously by reason of their ravages.

Remedies.—No other remedial measures—aside from those embodied in the one advised for wire worms—will be apt to afford relief to our Western corn growers.

The insect has some natural enemies, but, strange as it may appear, the two most efficient are the ones we are the most eager to exterminate, viz., the common crow and the ill-odored skunk. The first has been known since the days of Linnæus to have an insatiate fondness for these grubs, and we have ourselves observed his skunkship—at a proper distance, of course—going along the rows of corn at night, seeking them out from about the hills and devouring them.

Strangely enough the grub is afflicted by a vegetable parasite, allied to our mushrooms (Plate II, Fig. 8), which Prof. Riley describes as originating from between the base of the jaws and fore legs.*

*Before leaving the subject of root infesting species, it seems proper to place upon record the fact of a slender, greenish worm, being found by myself engaged in burrowing in the brace roots of a stalk of corn, in Northern Illinois, in the summer of 1881.

This fact might be of little value were it not that Prof. Riley, in Rep. Dep. Agr. 1881-82, pp. 142-5, mentions an insect whose larva seriously affected corn after the same manner in Georgia and South Carolina.

My specimen, as I recollect, was much like the larva described, and was sent to the office of the State Entomologist (see 11th Rep. St. Ent., Ill., p. 69), but I did not again hear from it.

AFFECTING THE STEM OR STALK.

CUT WORMS.

(*Noctuidæ.* Species, various.)

Plate II, Figs. 1, 2, 3, 4, 5, 6. Plate III, Figs. 2, 3, 4.

HARRIS: Ins. Inj. to Veg., 1852 (Ed. by Flint, 1862), pp. 434-58.
FITCH: 1st, 2d Rep. Ins. N. Y., 1856, pp. 310-18; Rep. St. Bd. Agr., 1855, pp. 542-550.
RILEY: 1st Mo. Rep., 1868, pp. 67-90.
PACKARD: Guide to Study Ins., 1869, pp. 302-18.
FRENCH: 7th Rep. St. Ent. Ill., 1878, pp. 81-96; *Loc cit*, 199-219; Ill. Dep. Agr. Rep., 1878; Syn. Noct. Ill., 8th Ann. Rep. So. Ill. Normal Univ., pp. 1-31.
LINTNER: Pamp., p. 25, 1885; Rep. St. Ag. Socty., N. Y., 1885.

In these we have another group of insects that are frequently alluded to as a single species, and we often hear of *the* cut worm, when there are some fifteen species that affect the corn more or less seriously.

To notice each one of these, even briefly, would be in itself material enough for a paper like this, and hence we will group them together and give the characteristics of such as are of the greatest interest to the corn grower.

The general forms of both the worms and the moths are portrayed by the figures, Plate II, Figs. 1, 2, being the dark-sided cut-worm *Agrotis messoria*, Harr; Plate III, Fig. 4, the greasy or black cut-worm *Agrotis ypsilon*, Ratt; Plate III, Fig. 2, the variegated cut-worm *Agrotis saucia*, Hub; and Plate II, Fig. 4, the w-marked cut-worm *Agrotis clandestine*, Harris.

Both the moths and larvæ are nocturnal in habits, but few of the former being observed during the day, while, as you are all well aware, the worms accomplish their work during the hours of darkness, or, rarely, on dark, damp days.

The eggs are deposited, as a rule, during late summer, and by the beginning of winter the worms that have hatched from these eggs are from one-third to one-half grown.

They now descend into the earth to the depth of six inches or more, and there form an oval cavity, where, in a torpid state, they pass the winter, ascending again in spring to resume their feeding.

The moth usually deposits her eggs in localities offering a liberal supply of food for her progeny, and hence we find in old pastures and meadows the home of the cut-worms; and on first being broken it seldom occurs that the farmer obtains a full stand of corn on such ground, particularly if it has been plowed early in May and at once planted, for in such cases the worms may, as it were, breakfast upon roots and stems of grass and sup upon corn.

Having at this time become nearly full-grown, they consume an immense quantity of food and are capable of traveling a considerable distance in search of it; and, with the destruction of the grass and roots, they congregate about the hills of corn, cutting off the young shoots, each species, in its particular manner, usually dragging the severed portions into their hiding place, where they can feast at their leisure.

During the latter part of May and first of June, the species usually the most destructive in our corn fields descend again into the ground still deeper than before, and, casting off their skins, become small, brown pupæ, from which in two or three weeks the adult moths emerge and make their way to the surface.

Remedies.—Prof. Lintner, in his excellent paper on cut-worms, especially recommends two remedial measures, viz:—starving, and digging out wherever their presence is detected in the fields.

Prof. Riley (Rep. Comm. Agr., 1884, pp. 299–300), recommends the laying down, at intervals, in the vegetable garden or cornfields, of loose bunches of clover poisoned with Paris green. The worms being attracted to the clover, feed upon it and die.

Doubtless both the clover and the digging out remedies will prove effective, but here in the West, where a field may contain any where from fifty to five hundred acres, they will often be found impracticable. But the measures advised for the wire worms and white grubs are within the reach of all farmers. In fact, fall plowing of itself is a commendable measure, even as a means of saving labor in the spring, and whatever cultivation is applied to the land previous to planting will be, in part, saved later in the season.

THE ROOT WEB WORM.

(*Crambus zeellus.* Fernald.)

Plate III, Fig. 5.

FERNALD: Can. Ent., Vol. XVII., p. 55, 1885.
FORBES: 14 Rep. St. Ent. Ill., pp. 12-17, 1885.

This insect is, to the entomologist at least, a new candidate for attention. Early in June, 1883, while searching about the roots of corn for another insect, I found a small number of the caterpillars that had apparently been feeding from the plant, but, as no others were found, no attempt was made to rear them.

In the summer of 1884, Prof. Forbes informed me that they had appeared in various parts of central Illinois, in sufficient numbers to cause serious damage, but as he had not yet reared the adult, he was still unable to say just what species it would prove to be. It seems, however, from his report, that he succeeded in breeding an adult on July 22, which proved to be a medium sized moth or miller, of a dull leaden gray color.

The worms are rather slender, three-fifths to four-fifths of an inch long, with the general color of the body pale reddish brown; head much darker; neck dusky yellow. Along the sides and back are small, smooth spots of a darker color than the rest of the body; from the somewhat irregular rows of these spots, the worms have an indistinct striped appearance. Each of these darker spaces bears an unusually long black hair, which gives to the worms a somewhat bristley look when closely examined.

The moths are rather slender bodied, and when at rest, have the habit of folding the wings in such a manner as to appear like a small roll. When the wings are expanded as in flight, their form is illustrated in Plate III, Fig. 5^2. While the upper or fore wings are of a dull leaden gray color, mixed with ashy and whitish, crossed by dull ochre lines, the hind wings are pale fuscous with lighter fringes.

The presence of the caterpillars about the hills of young corn may be known by a small elongate mass of webbed dirt about the plants, an inch or two below the surface, and they frequently "spin" a web over the leaves in traveling about to feed upon them. They also sometimes sever the plant after the manner of cut worms.

This loose mass of webbed dirt is, however, their home, and they may be found therein during the day from about the 10th of May until the middle of June or thereabout.

Remedies.—Although they have been reported to me during the past season from various parts of the State, I have not been able to breed, or experiment with them, and hence, aside from the application of poisonous substances like Paris green and London purple, or, perhaps, Hammond's slug shot, I can suggest no practical remedial measures.

THE STALK BORER.

(*Gortyna nitela*, Guen.)

Plate III, Figs. 1, 2.

GUENEE: Sp. Gen. Lep., V—Noct., 1st 1852, p. 124.
HARRIS: Ins. Inj. Veg., 1862, p. 440; Ent. Corr., 1869, p. 315.
RILEY: 1st Rep. Ins. Mo., 1868, pp. 92-93; 8th Rep. Ins. Mo., 1876, p. 37; Gen. Ind. Suppl. Mo. Rep., 1881, p. 56.
WALSH & RILEY; Am. Ent., vol. 1, 1868, p. 22.
PACKARD: Guide Stud. Ins., 1869, p. 310.
LE BARON: 2d Rep. Ins., Ill., 1872, p. 141.
SMITH: 11th Rep. St. Ent., Ill., 1878, pp. 112-14.
FRENCH: 11th Rep. St. Ent., Ill., 1878, pp. 221-22.
LINTNER: Rep. N. Y. St. Agr. Soc., 1879, pp. 48-52; 1st Rep. St. Ent. N. Y., 1882, pp. 110-16.
WEBSTER: Rep. Comm. Agr., 1884, p 392-93; Bull. 3, Purdue Uni., 1885, p. 5.

Regarding this species I extract the following from Bulletin No. 3, of Purdue University, published by me in April, 1885.

As is usually the case, it is the larva or worm that is the culprit. This worm is too well known to require more than a brief description. It is when full-grown a little over an inch long, bluish-brown above, with three white lines on the back, the central one being continuous, the others interrupted for a considerable space at the middle. [Plate III, Fig. 2.]

The adult insect is a medium sized moth, measuring about one inch and a half from tip to tip of wings when expanded; of a wood-brown color, with a narrow, yellowish-white band across the outer third of each fore wing. [Plate III, Fig. 1.]

Although we are not yet in possession of the entire life history of this insect, it doubtless passes the winter in the adult stage, but where it hibernates is still unknown. The moths deposit their eggs on grass or early sown grain, probably not later than the first of May. The larvæ hatching from these eggs, at once penetrate the stem of the plant, and remain feeding therein until their increasing dimensions compel them to seek the more commodious quarters offered by the grain and corn fields of the agriculturists.

Remedies.—From the fact that the moths doubtless fly freely in spring, together with the secluded habits of the larvæ, it is obviously well nigh impossible to combat them successfully in small grain or grasses. It seems at least plausible, however, that we may be able to do something toward checking them in the corn fields, and thereby indirectly protect other crops where they are less accessible. And in view of their rapid increase in numbers and destructiveness during the last few years, it seems imperative that something should be done.

In young corn, they are usually found among the folds of the fresh, tender leaves, and although out of sight, may not be out of the reach of fluid applications. I would recommend for this purpose an ounce of powdered pyrethrum, dissolved in two gallons of water, or a mixture of one part crude carbolic acid to one hundred parts water. These solutions should be applied to the plants in such a manner as to run down among the young unfolding leaves. One farmer reports quite satisfactory results from dusting the young corn with the powdered pyrethrum immediately after a shower, or during mornings after a heavy dew, when more or less water had collected among the central leaves.

I would be glad to learn whether or not these worms are particularly abundant about old stumps or heaps of rubbish not surrounded by grass, and distant from the margins of the fields.

THE SPINDLE WORM.

(*Achatodes zeæ*, Harris.)

Gortyna zeæ HARRIS: Ins. Inj. Veg., 1852 (Flint, 1862), pp. 439-40.
Achatodes zeæ FRENCH; 7th Rep. St. Ent. Ill., 1878, pp. 100, 222-23.

This insect affects young corn in much the same manner as the preceding. According to Harris, the worms generally begin their work before the spindle rises above the tuft of leaves in which it is embosomed. They enter the leaf-stalk near the ground, and, penetrating the soft center, work their way both upwards and downwards.

The worm, when fully grown, is an inch or more in length, and of the thickness of a goosequill; of a yellowish color, with the head and the top of the first and last segments black, and with a double row of piliferous spots; also, black across each of the other segments.

The pupa is formed within the cavity which the worm has excavated in the stalk, and from this the adult moth issues in August.

The moth has fore wings of gray, streaked with rust-red along the veins, with about three irregular transverse lines and a large patch, all of the same rust-red color, near the apex of the wings. Hind wings smoky-brown. Body purplish-gray, with a row of rust-red tufts along the back.

Remedies.—The same as in the preceding.

THE CHINCH BUG.

(*Blissus leucopterus*, Say.)

Plate III, Fig. 6. Plate IV, Fig. 1.

Lygæus leucopterus SAY: Des. N. Sp. Het-Hem, N. A. pamph., p 14, 1832.

Rhyparochromus leucopterus HARRIS: Ins. Inj. Veg., pp. 198-9, 1852.

Micropus leucopterus FITCH; 1st and 2d Reps. St. Ent. N. Y., pp. 277-97, 1855.

Micropus leucopterus RILEY: 2d Rep. Ins. Mo., pp. 15-37, 1869. *Id.* 7th Rep., pp. 19-50, 1875.

Blissus leucopterus THOMAS: 7th Rep. St. Ent. Ill., pp. 40-71, 1878. Bull. U. S. Ent. Com., pp. 1-44, 1839.

Blissus leucopterus FORBES: 12th Rep. St. Ent. Ill., pp. 32-63, 1882.

Although this insect began to depredate upon wheat, a little over a century ago, it was not until the year 1832 that it was designated by other than various common names. In that year Mr. Thomas Say, a resident of New Harmony, Indiana, described the species, from a single example found in Virginia, giving it the specific name of *leucopterus*, or white-winged.

Although known chiefly as a depredator on spring wheat, nevertheless this insect has occasionally in the past caused serious damage in corn fields.

Formerly they originated in fields of barley or spring wheat, and migrated to the corn fields when their food became scarce. But since the decline of spring wheat growing the adults establish themselves in the fields as soon as the corn is up, and deposit their eggs on the plants; the young bugs hatching from these eggs doing more or less damage by extracting the juices from the plants.

From the fact that occasional drenching rains during the breeding season are fatal to newly-hatched bugs, they are not likely to prove very injurious to young corn, except the weather be very dry from the time the corn is up until about the middle of July, unless in case of a migration from fields of spring wheat or barley.

As the insect is well known everywhere and fully illustrated in all its stages of development in Plate IV, no description is deemed necessary here.

Remedies.—The adults can not be prevented from entering the field in spring as they fly about with perfect freedom. But their numbers may be reduced by burning all grass and rubbish about the fields in early spring, as it is here that they pass the winter.

An emulsion consisting of one part kerosene to one part milk, diluted with thirty-eight parts water, applied to infested hills will destroy the young bugs, but this will hardly be practical in large fields with ordinary facilities for application.

CORN BILL-BUGS.

(*Sphenophorus pertinax*, Oliv.; *S. robustus*, Horn; *S. sculptilis*, Uhler (*S. zeæ*, Walsh); *S. parvulus*, Gyll.)

Plate IV, Fig. 4.

These are all medium-sized, dark-colored insects belonging to the extensive group of snout beetles. They resemble each other rather closely and will be easily recognized by the figure of *robustus* in the illustration.

S. pertinax is stated by Dr. G. H. Horn (Trans. Am. Phil. Society, 1873, p. 419) to occur from the Atlantic to the Pacific and from Canada to Louisiana, and a variety of the species destroys corn in the Southern States.

S. robustus has been observed destroying corn in South Carolina by Mr. L. O. Howard, of the Bureau of Entomology at Washington (Rep. Com. Agr., 1881–82, pp. 138–42).

S. (*zeæ*) *sculptilis* by Mr. B. D. Walsh in New York (Practical Entomologist, vol. II, pp. 117, 118).

S. parvulus in Missouri, by Prof. Riley (Am. Naturalist, vol. 15, pp. 915–16), and by myself in Illinois.

The adult female punctures the stem of the young corn in June in our latitude and places her eggs in the cavity. From these eggs hatch small, white, footless larvæ, with small brown heads, and these work within the stem of the plant and destroy it.

Here, in the West, these insects have never been known to cause any great amount of damage, but in the Eastern and Southern States their depredations are much more frequent.

Remedies.—The fact that *S. robustus* probably passes the winter in the beetle state within the stalks of corn led Dr. Riley (Rep. Comm. Agr., 1881–82, p. 140) to suggest gathering and burning the stalks, or at least the bases of them for fully six inches above the ground.

Whether the other species have the habit of wintering in such places or not is not known, and hence this remedy might or might not apply to all.

While the beetles are puncturing the plants in spring, if the act is performed above the surface of the ground, an application of Paris green or London purple might be effective, or it is possible that sand moistened with kerosene placed about infested hills, as suggested by Prof. Lintner, might prove of some service. Whether a change of crop or fall plowing would have any effect remains to be learned.

AFFECTING THE LEAVES.

The species depredating upon this part of the plant are very numerous, but seldom cause other than temporary injuries. A descriptive list is here given, including such as are known to prey upon the leaves, and as the majority of them are likely to occur in excessive numbers only over limited areas, topical applications of Paris green or London purple, either in the form of solutions or powder, will be found as effective and practical as anything that can be devised.

THE ARGE TIGER MOTH.

(*Arcta arge*, Drury.)

The caterpillar is dark brown, with five pale yellow stripes, each segment of the body bearing a transverse row of brownish-yellow tubercles, from which arise tufts of brown hairs. Common.

(*Leucarctia acræa*, Smith.)

This is another of our common hairy caterpillars. It is about an inch and a quarter long, with black or brown hairs on the back and fore part of the body, lighter on the sides, with hairs growing in spreading clusters from transverse rows of yellowish colored warts.

THE VIRGINIA ERMIM.

(*Spilosoma Virginica*, Fab.)

Equally common; about an inch and a half long, color varying from creamy white to dark brown; when full grown, foxy red, darker at extremities. Hairs rising from transverse warts as in the preceding.

THE SADDLE-BACK CATERPILLAR.

(*Empretia stimulea*, Clem.)

This has a curious appearance, being broad, rounded above and flatted beneath, with a row of prickly thorns around the edges of the body, and four, much larger, situated two on the fourth and two on the tenth segments. Color, reddish brown, with a bright pea-green, saddle-shaped patch over the middle part of the body, centred with a broad, elliptical reddish spot, the red and green spots edged with white.

THE IO MOTH.

(*Hyperchiria Io*, Fab.)

The caterpillar is green, covered with branching spines arising from tubercles, of which there are six on each segment of the body. Larger than any of the preceding.

THE VIOLET NEPHELODES.

(*Nephelodes violans*, Guen.)

In form this closely resembles some of the cut-worms. It is an inch and three-quarters long, with four broad, dark-brown, longitudinal stripes, alternating with three narrower, grayish-yellow stripes, one of which is situated along the middle of the back. Body not hairy.

THE FALL ARMY-WORM.

(*Laphygama frugiperda*, Guen.)

When young the worm is nearly black, but later varies from pale brown to dirty green; back brownish, with a narrow line in the middle, bordered on each side by a darker shade, next a yellow line, then a darker one, then a wavy yellow line, below which is another of a yellow or flesh color.

THE ARMY-WORM.

(*Leucania unipuncta*, How.)

Plate IV, Figs. 2, 3.

Full grown worms are dingy black, with a narrow dusky stripe on the back, then a narrow black line, followed by a narrow white one, then a yellowish stripe, followed by an indistinct white line, then a dusky stripe, then a narrow white line, then a yellowish stripe, then an indistinct white line. Below, obscure green. Occurs irregularly in great abundance, usually during a wet season preceded by two dry ones.

THE ZEBRA CATERPILLAR.

(*Ceramica picta*, Harr.)

When full grown this caterpillar is about two inches long, marked throughout its entire length with distinct alternating black and yellow stripes; along each side, between twó yellow stripes, is a broad, white stripe, with numerous transverse, black marks resembling runic letters. Head smooth, yellowish brown.

THE SULPHUR-LEAF ROLLER.

(*Dichelia sulphureana*, Clem.)

The larva is a slender, cylindrical, yellowish-green caterpillar, with honey-yellow head; body with piliferous tubercles, each bearing a brownish hair. Rolls the leaf lengthwise, and lives within the cylinder thus formed.

THE RED-BANDED LEAF ROLLER.

(*Lophoderus triferans*, Walk.)

This is a pale-green larva, which rolls the leaves as in the preceding, and will be found in the cylinder formed within a web.

THE SPOTTED LADY-BEETLE.

(*Megilla maculata*, DeG.)

This is our common red and black lady-beetle, and is said to sometimes feed upon the leaves of young corn.

THE ROSE CHAFER.

(*Macrodactylus subspinosus*, Fab.)

Plate IV, Fig. 5.

Well known as the rose bug, but frequently quite injurious to young corn, devouring the tender leaves in May and June.

THE TWELVE-SPOTTED DIABROTICA.

(*Diabrotica twelve-punctata*, Oliv.)

The beetle resembles in form the cucumber beetle D. vittata, but, instead of stripes, has twelve black spots on its yellow wing-covers. I have observed these beetles eating holes in the leaves of young corn in June, in Benton County, Indiana.

THE LIGHT-COLORED SYSTENA.

(*Systena blanda*, Mels.)

This is a small, elongate, narrow beetle, about one-eighth of an inch long, with hind thighs greatly enlarged, enabling it to leap about after the manner of a flea. The wing covers are pale yellow, with three slightly darker stripes. Eats holes in the leaves of corn in the Middle States and also in Illinois.

THE BRASSY FLEA-BEETLE.

(*Chætocnema publicaria*, Cr.)

A small, active, brassy-green beetle, which Prof. Forbes, in the Fourteenth Rep. State Ent., Illinois, accuses of riddling the leaves of corn with small holes.

THE STRIPED BLISTER-BEETLE.

(*Epicauta vittata*, Fab.)

Plate V, Fig. 1.

This is our well-known long, striped potato beetle, which feeds upon a variety of vegetables, as well as potatoes. During the past summer I saw them eating the lower leaves of corn early in July, leaving only the mid-rib, and being distributed over an area several acres in extent.

THE ASH-COLORED BLISTER-BEETLE.

(*Epicauta cinera*, Forst.)

With the preceding they were observed at work in the cornfields, but these only in limited numbers.

IMBRICATED SNOUT-BEETLE.

(*Epicœrus imbricatus*, Say.)

Plate IV, Fig. 6.

This is quite a large, robust curculio, with a short snout. The color is ash-gray, clouded with slate-colored spots.

Prof. Riley states that they were quite abundant and destructive in 1873, and I have, at a later date, observed them feeding on the leaves of young corn.

LEAF HOPPERS.

(*Jassus inimicus*, Say.)
(*Cicadulani grifrons*, Forbes.)
(*Cicadula quadrilineatus*, Forbes.)
(*Macropris nobilis*, Harris.)

These are all small, jumping plant bugs, abundant in our fields during summer In 14th Rep. State Ent. Illinois, Prof. Forbes accuses them of injuring young corn in June and July. They doubtless do puncture the leaves and tender stems, and extract juices from these; but that they should do so at so late a date as July, in sufficient numbers to injure the plant, is rather surprising.

THE CORN APHIS.

(*Aphis maidis*, Fitch.)

Vide "Insects Affecting the Roots."

GRASSHOPPERS.

Whenever these occur in any degree of abundance, as they did during the past summer, they will doubtless be found to feed more or less on the leaves of corn. With us, however, they occur too late in the season to do much injury by attacking the leaves.

AFFECTING THE SILK AND POLLEN.

The following insects are known to feed upon the silk of corn, sometimes, as I have observed in late planted fields, before the kernels had been fecundated:

THE BROWN LUPERUS. *Luperus brunneus*, Cr. (See Am. Ent., vol. 3, p. 132.)

THE LONG HORNED DIABROTICA. *Diabrotica longicornis*, Say. *Vide* "Affecting Roots."

THE STRIPED BLISTER-BEETLE. *Epicauta vittata.* Fab.

THE ASH-COLORED BLISTER-BEETLE. *E. Cinera*, Forst.

THE BLACK BLISTER-BEETLE. *E. Pensylvanica*, DeG.

THE INSIDIOUS FLOWER-BUG. *Anthocoris insidiosus*, Say.

Although this last species is known to be of carnivorous habits also, they may frequently be found in all stages of development literally swarming among the silk of corn, with no other visible food supply.

Grasshoppers.

These did considerable injury to corn during the past summer, many farmers being of the opinion that the extraordinary amount of damaged corn found in the fields, on gathering the crop, was due to the denuding of the tips of the ears of the silk, thereby allowing the water to run down the ear beneath the husks to the base, where the rot was the most noticeable.

Diabrotica longicornis and a jet black species, *D. fossata*, Lec, both feed upon the pollen, as also the Tarnished Plant-bug, *Capsus limeolaris*, Beam, which latter species, I have myself observed puncturing the anthers.

AFFECTING THE EAR.

The Corn Worm.

(*Heliothis armiger*, Hubn.)

Plate V, Fig. 4. Plate VI, Fig. 1.

Hubner: "Eur Schmett., Noct.," p. 370.

Glover: Repts. Com. Agr., 1865, p. 43; 1866, p. 30; 1870, p. 84; 1871, 84; and Repts. Com. Pat., 1854, pp. 64-65, 69-71: 1855, pp. 282-85.

Riley: 3d Rep. Ins. Mo., 1871, pp. 104-9; 4th Rep. Ins. Mo., 1872, p. 129; Rep. Com. Agr., 1881-1882, pp. 145-49.

Lintner: 30th Rep. N. Y. St. Mus. Nat. Hist., 1878, pp. 165-66; 1st Rep. St. Ent., N. Y., 1882, pp. 116-26.

Thomas: 7th Rept. St. Ent. Ill., 1878, p. 4.

French: 7th Rep. St. Ent. Ill., pp. 102-106; 11th Rep. St. Ent. Ill., 1882, pp. 82-104.

In our own country this insect is known both under the name of corn worm, and also the boll worm. The first is applied in the North, where it attacks the ears of corn in the fields, and the second in the South, where it attacks both corn and cotton, the latter in the boll.

It is one of the most widely distributed insects known among naturalists, being found in Great Britain, France, Turkey, West Africa, India, Patagonia and Japan.

In the Northern States its ravages are not so marked, but in the South, and even so far north as Southern Illinois and Kansas, it is often very destructive, especially during very dry, warm seasons.

The adult insect is a medium-sized, heavy-bodied moth with yellowish-gray or clayey-yellow fore wings, tinged with light olive green, marked with lines of darker green and dark brown or black, as shown in the illustration.

The hind wings are of a paler shade, with a broad, blackish outer band inclosing a pale spot toward the apical portion.

According to Prof. Comstock, there are five broods of this insect in a season in the Southern States, but Prof. Riley is confident that in the latitude of Missouri, Southern Illinois and Virginia, there are but three.

As Prof. French has carefully studied the fall, or hibernating brood, in Southern Illinois, we shall devote our attention exclusively to this brood, as being the one most susceptible to remedial measures here in the North.

So far as known, the eggs are deposited by the parent moth in the tip of the ear, among the silk, where, after hatching, the larvæ feed until about one-third grown, when they begin to tunnel their way through the kernels of the ear, under the husks, working toward the base, causing the corn to mould. I have noticed them thus engaged, during mild seasons in Northern Illinois, until late in November, feeding upon corn sufficiently dry to crib.

When full grown, these worms are about an inch and a quarter long, rather robust, tapering slightly toward the head. In color they vary from pale green to dark brown, striped in darker shades of the same colors. There are several black, shining, elevated tubercles on each segment, each bearing a short, brown hair.

After reaching their full growth, according to Prof. French, these larvæ sink a round hole in the earth, the inside or walls of which they cement in some manner, so that in digging about the hills of corn the Professor was able to secure several of these tubes intact, and found that this brood of larvæ did not form cocoons but remained at the bottoms of the tubes and transformed to pupæ, passing the winter in that state, the tops of these tubes being closed by a film of dirt from one-eighth to one-sixteenth of an inch thick.

Remedies.—By digging up these tubes and exposing them to the action of water, and freezing them, Prof. French found that where the tubes were unbroken the pupæ remained uninjured, but where the tubes were broken up, they were almost invariably destroyed; indicating that plowing in the fall would prove a pretty effectual as well as a practical remedy.

THE INDIAN CETONIA.

(*Euphoria inda*, Linn.)

Plate IV, Fig. 7.

Scarabæus indus LINNEUS: St. Nat., Ed. X, i., 1758.
Cetonia inda HARRIS: Ins. Inj. Veg., p. 40, 1862.
Euryomia inda GLOVER: Rep. Com. Agr., p. 90, 1868.
Euryomia inda THOMAS: 6th Rep. St. Ent. Ill., p. 108, 1877.
Euryomia inda LINTNER: 38th Ann. Rep. N. Y. St. Agr. Society, pp. 67-69, 1878; *Euphoria inda*, 1st Rep. St. Ent. N. Y., pp. 232-39, 1882.
Euryomia inda RILEY: Rep. Com. Agr.. 1878, p. 208.
Euphoria inda AUSTIN: Supp. Ch. List. Col. N. A., p. 26, 1880.

The adult beetle has been accused of feeding upon the kernels of young corn in the fields, and Dr. Harris states that they also, sometimes, feed upon the sap of the stalks in September.

Its depredations have so far been of minor importance, and, in fact, it is not altogether clear that the insect is guilty of making the first attack upon the corn, there seeming to be a strong probability that birds, particularly the English sparrow, are the first depredators, the beetle only taking what is left.

I have observed black birds pecking the young ears of corn in the fall, leaving the milk oozing out of the kernels, and have no doubt but what this would attract even innoxious insects.

THE CORN MYRIAPOD.

(*Julus impressus*, Say.)

Plate V, Fig. 2.

THOMAS: 11th Rep. St. Ent. Ill., pp. 44-45, 1882.
WEBSTER: *Prairie Farmer*, Apr. 15th, 1882.

During the autumn of 1881, when the corn worm was working in the fields, many cases came under my observation where the ear was not attacked at the tip, but a small, round hole, about the circumference of a No. 4 shot, had been cut directly through the husks, without any apparent selection as to location. These excavations were extended directly on through the kernel to the cob, the objective point evidently being the germ, as from this excavation, channels or galleries extended in all directions, frequently two inches in length, leaving untouched all other parts of the kernels, but always including the germs. Frequently several of these excavations would be found in a single ear, those on the ground being most seriously affected, although standing corn was not exempt from attack.

The author of this mischief proved to be our common, long, slender, cylindrical, brown "thousand-legged worm," and which is abundant every where under sticks, boards and stones, but not previously known to injure corn.

The facts were embodied in a note published by me in the Prairie Farmer, and almost simultaneously with its appearance in print came State Entomologist Thomas' sixth report, containing a short account of similar observations, made by himself on the same species.

THE SPOTTED LADY-BEETLE.

(*Megilla imaculata*, DeG.)

Mr. Th. Pergande found both larvæ and adults of this species feeding upon the kernels of corn, in the vicinity of Washington, during August, 1881. (See Am. Nat., Vol. XVII, p. 322), and Prof. S. A. Forbes, in his third report as State Entomologist of Illinois, p. 21, 1884, gives a similar experience.

Both of these gentlemen observed the beetles at work, and partly buried within the kernel, but it would be gratifying to know if some other insect, or possibly a bird, had not first broken the cuticle and fed from the substance, leaving a part which tempted the beetles to partake also.

Diabrotica longicornis. These beetles also feed on the young kernels at the tips of the ears.

THE ANGOUMOIS GRAIN MOTH.

(*Sitotroga cerealella*, Oliv.)

Plate V, Fig. 3. Plate XI, Fig. 2.

Anacampris cerealella HARRIS: Ins. Inj. Veg., 1862, pp. 499-510.
Gelechia cerealella PACKARD: Guide. Stud. Ins., 1869, p. 350.
G. cerealella WEBSTER: 12th Rep. St. Ent. Ill., pp. 144-54, 1883.
G. cerealella RILEY: Rep. Comm. Agr., 1884, pp. 345-50, 1885.
Sitotroga cerealella LINTNER: 2d Rep. St. Ent., N. Y., pp. 102-10, 1886.

The adult insect is a small, slender brownish-gray moth, the larva of which is about one-fifth of an inch long; slender, fleshy, white, with brown head.

Although more especially affecting stored grain, the moth sometimes deposits her eggs upon the ears of corn in the fields, from which eggs the larvæ hatch and burrow their way to the germs of the kernels, upon which and the surrounding substance they subsist.

Under favorable temperature, about a month is required for the insect to pass from the egg to the adult, which, under favorable climatic influences, will at once deposit eggs for another brood.

This insect will probably prove injurious to corn only in the extreme southern portion of the State, and then only when the corn is left standing in the fields until late in the season, and the weather happens to be exceptionally mild. In the Southern States, where these conditions commonly occur, the pest is much more destructive.

Remedies.—There is no way of preventing the moths from depositing their eggs in the fields, but the worms can be destroyed by submitting the corn to a temperature of 120° Fh. for four or five hours.

In conclusion, I wish to state that the object in presenting this paper is to call attention to all insects affecting the corn crop, from the time the seed is planted until the crop is secured.

While attempting to make the paper of as much scientific value as possible, the chief aim has been to place in the hands of the farmer and the student, a practical treatise relating to corn destroying insects. A discussion of the question, in detail, would require a volume of itself; hence, I have given under all of the more important species, references to publications liable to come within your reach, where, if you choose, you may get more extended accounts of these insects than can be given here. I have myself drawn freely from those authors, and in the preparation of this paper, claim nothing more than the credit of a compiler, except in the various instances where my title to originality is given, either in the references or in the text.

EXPLANATION OF PLATES.

PLATE I.

Fig. 1. The Seed Corn Fly, *Anthomyia zeæ*, Riley. *a.* Maggot; *b.* Puparium. (After Riley.)

Fig. 2. Corn Eaten by Larvæ of Seed Corn Fly. (After Riley.)

Fig. 3. Adult Snapping Beetle, *Melanotus communis*, Gyll. (After Fitch.)

Fig. 4. Adult Snapping Beetle, *Agriotes mancus*, Say. (After Fitch.)

Fig. 5. Wire Worm, Larva of Snapping Beetle.

Fig. 6. Adult of Corn-Root Worm, *Diabrotica longicornis*, Say. (Drawn by W. S. Windle.)

Fig. 7. Egg of same enlarged forty diameters, the triangular section at the side is enlarged eighty diameters. (Redrawn from Forbes by Windle.)

Fig. 8. Corn-root Worm. (Redrawn from Forbes by Windle.)

Fig. 9. Same, working in root of corn. (Redrawn from Forbes by Windle.)

Fig. 10. Pupa of Corn-root Worm. (Redrawn from Forbes by Windle.)

Fig. 11. The Corn Aphis, *Aphis maidis*, Fitch. Fig. 1. Winged insect; Fig. 2. Head and antenna of Aphis mali; Fig. 3. Wingless female; Fig. 4. Root of corn infested by *Aphis maidis*. (After Walsh.)

PLATE I.

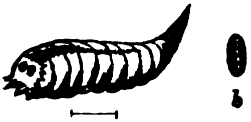

Fig. 1.

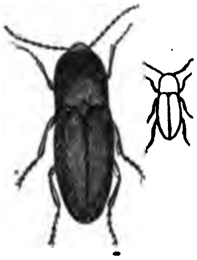

Fig. 3.

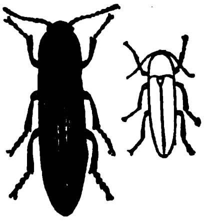

Fig. 4.

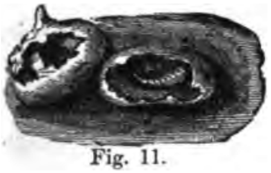

Fig. 11.

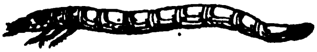

Fig. 5.

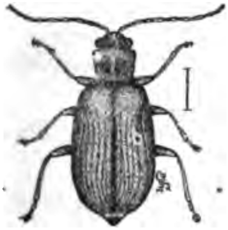

Fig. 6.

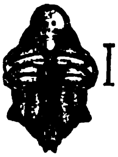

Fig. 10.

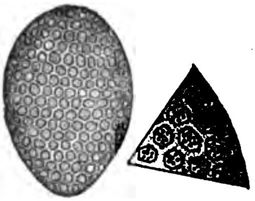

Fig. 7.

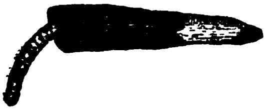

Fig. 9.

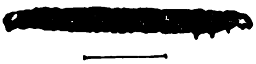

Fig. 8.

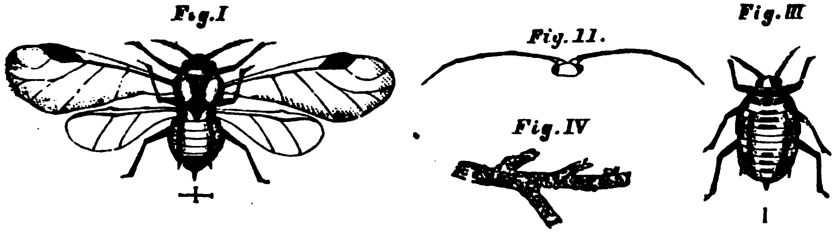

Fig. 11.

PLATE II.

Fig. 1. The Reaping Rustic, adult of the Dark-sided Cut-worm, *Agrotis messoria*, Haw. (After Riley.)

Fig. 2. The Dark-sided Cut-worm. (After Riley.)

Fig. 3. The Clandestine Owlet Moth, adult of the W-marked Cut-worm, *Agrotis clandestina*, Haw. (After Riley.)

Fig. 4. The W-marked Cut-worm. (After Riley.)

Fig. 5. The Devastating Dart, adult of the Glassy Cut-worm, *Hadena devastatrix*, Bruce. (After Riley.)

Fig. 6. The Glassy Cut-worm, showing section of skin highly magnified. (After Riley.)

Fig. 7. The May Beetle, *Lachnosterna fusca*, Frohl. 1, The pupa in cell in the ground; 2, the larva or the white grub in the ground; 3 and 4, adult beetles. (After Riley.)

Fig. 8. White Grub, attacked by fungus parasite, *Torrubia ravenelii*, Berk. (After Riley.)

PLATE II.

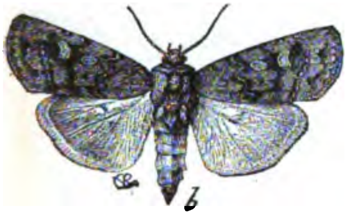

Fig. 1.

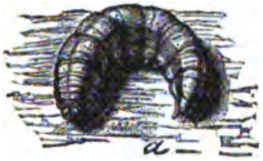

Fig. 2.

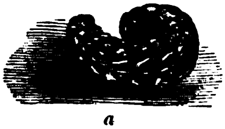

Fig. 4.

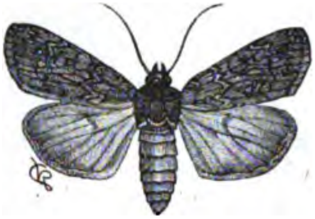

Fig. 3.

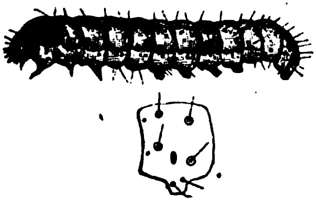

Fig. 6.

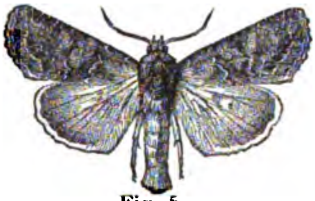

Fig. 5.

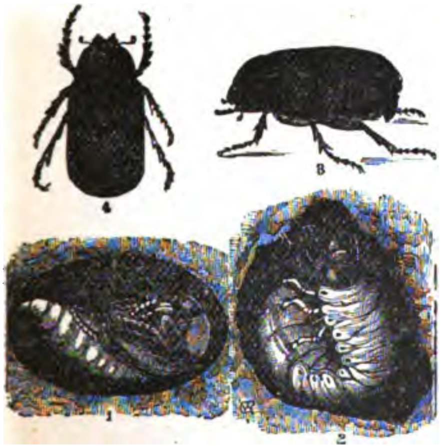

Fig. 7.

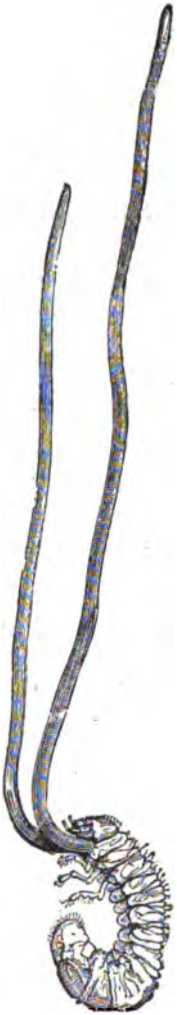

Fig. 8.

PLATE III.

Fig. 1. 1, adult moth of the Stalk-borer, *Gortyna nitela*, Guen.; 2, the Stalk-borer. (After Riley.)

Fig. 2. *d*, the Unarmed Rustic, adult of the variegated Cut-worm, *Agrotis saucia*, Hub. *a*, the larva, natural size; *b*, dorsal view of the larval head; *c*, dorsal view of middle segment of larvæ. (After Riley.)

Fig. 3. *a*, single egg of same, highly magnified; *b*, cluster of eggs on twig, natural size. (After Riley.)

Fig. 4. *c*. The Lance Rustic, adult of the Greasy or Black Cut-worm, *Agrotis ypsilon*, Ratt. *a*, greasy or black cut-worm; *b*, head of larva from front. (After Riley.)

Fig. 5. The Corn-root Web-worm, *Crambus zeellus*, Fld. 1, larvæ; 2, moth; 3, affected plant; *a*, web-nest in earth; *b*, gnawed surface of stalk; *c*, tips of severed leaves drawn into mouth of nest. (After Garman.)

Fig. 6. Adult Chinch Bug, *Blissus leucopterus*, Say. (After Riley.)

PLATE III.

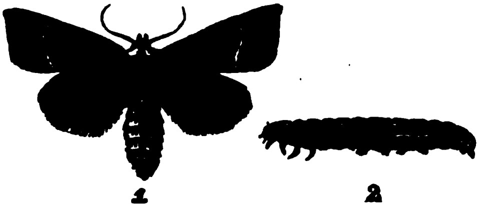

Fig. 1.

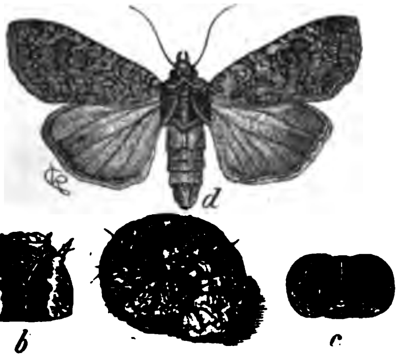

Fig. 2.

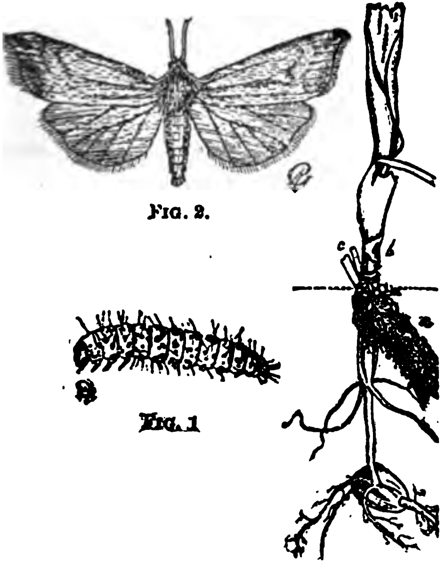

Fig. 5.

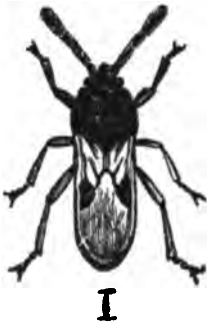

Fig. 6.

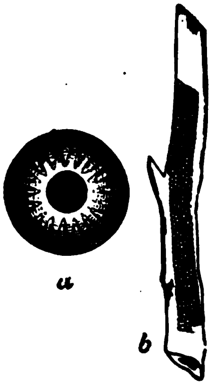

Fig. 3.

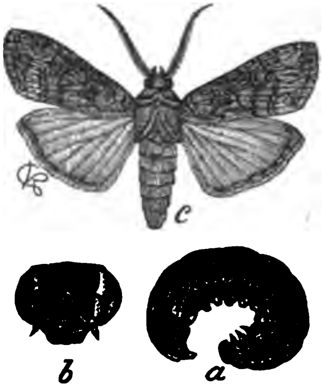

Fig. 4.

PLATE IV.

Fig. 1. Chinch Bug, *Blissus leucopterus*, Say. *a* and *b*, eggs; *c*, young larva; *d*, tarsus of same; *e*, larva after first moult; *f*, larva after second moult; *g*, pupa; *h*, leg of same; *i*, beak. (After Riley.)

Fig. 2. The Army Worm, *Leucania unipuncta*, Guen. *a*, male moth; *b*, abdomen of female; *c*, eye; *d*, antennal joint of male; *e*, ditto of female. (After Riley.)

Fig. 3. Full-grown Army-worm. (After Riley.)

Fig. 4. The Corn Bill-bug, *Sphenophorus robustus*, Horn. *a*, larva; *b*, pupa; *c*, beetle, dorsal view; *d*, ditto, outline, side view, natural size. (After Riley.)

Fig. 5. The Rose-bug, *Macrodactylus subspinosus*, Fab., slightly enlarged; enlarged antenna on the right; enlarged front leg on the left. (After Riley.)

Fig. 6. The Imbricated Snout-beetle, *Epicærus imbricatus*, Say. Adult, dorsal and lateral views. (After Riley.)

Fig. 7. The Indian Cetonia, *Euphoria inda*, Linn. *a*. Antenna enlarged. *b*. Fore leg enlarged. *c*. Hind leg enlarged.

PLATE IV.

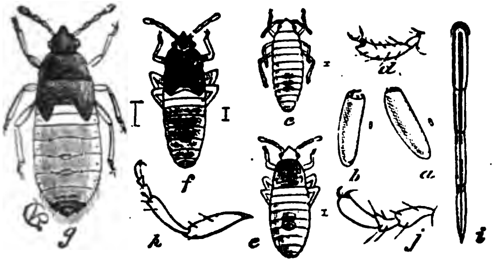

Fig. 1.

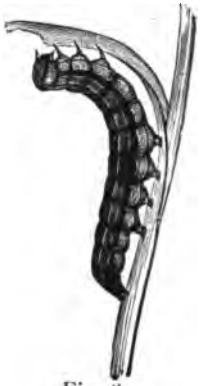

Fig. 3.

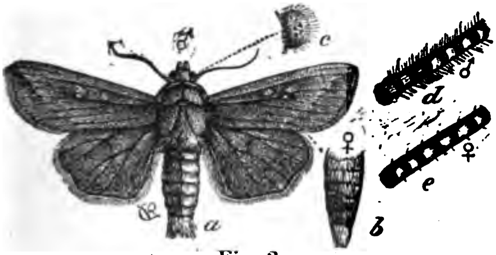

Fig. 2.

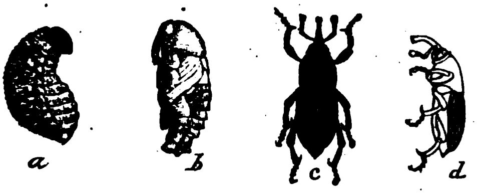

Fig. 4.

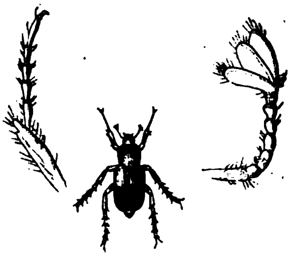

Fig. 5.

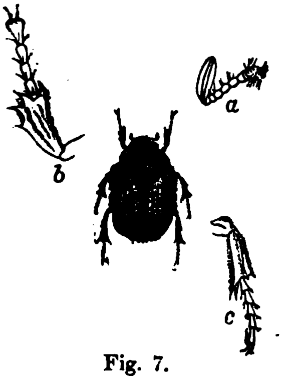

Fig. 7.

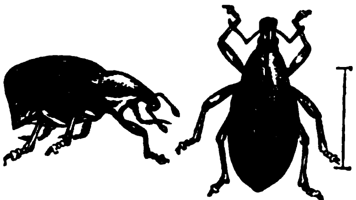

Fig. 6.

PLATE V.

Fig. 1. The Long Striped Blister-beetle, *Epicauta vittata*, Fab.

Fig. 2. Thousand-legged Worm, *Julus*.

Fig. 3. The Little Grain-moth, *Sitotroga cerealella*, Oliv. *a*. Full-grown larva; *b*. pupa; *c*. female moth; *d*. wings of a paler variety—all enlarged; *f*. grain of corn cut open to show larva at work—natural size; *g*. labial palpus of male moth; *e*. egg; *h*. anal segment of pupa—all enlarged. (After Riley.)

Fig. 4. The Corn Worm, *Heliothis armiger*, Hubn. *a*, *b*. Eggs; *c*. larva; *d*. pupa within cocoon; *e*. the moth; *f*. ditto, at rest. (After Riley.)

PLATE V.

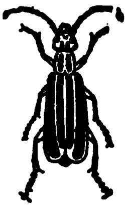

Fig 1

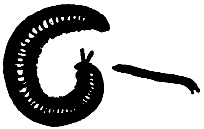

Fig. 2.

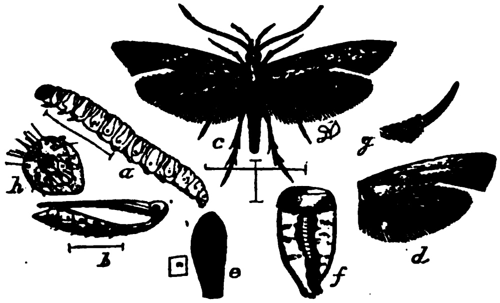

Fig. 3.

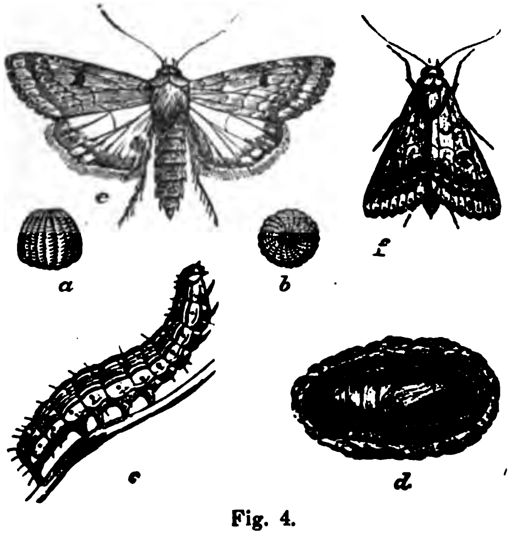

Fig. 4.

PLATE VI.

Fig. 1. The Corn Worm; showing the worms at different stages of growth; the pupa; the cocoon, and the moth at rest. (After Riley.)

Fig. 2. Ear of corn showing work of Grain Moth, *Sitotroga cerealella*, Guen. (After Riley.)

PLATE VI.

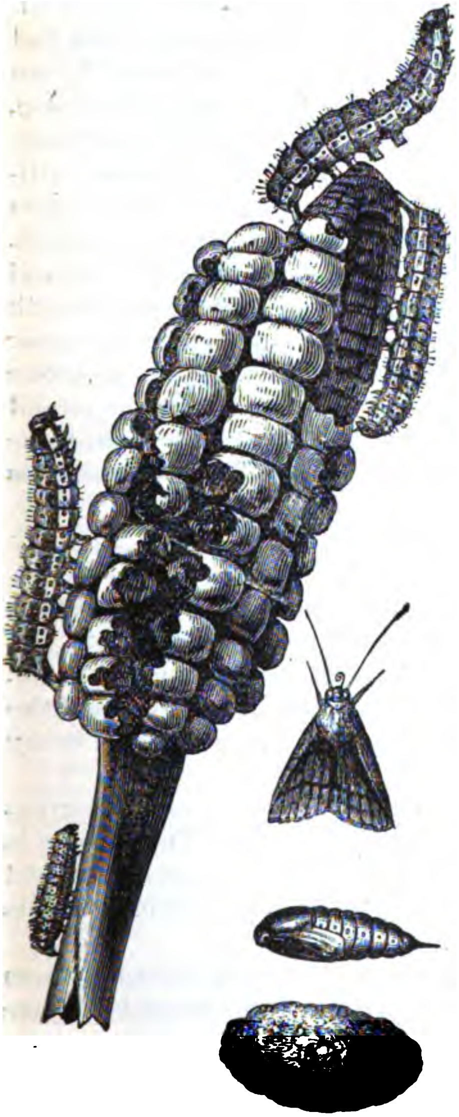

Fig. 1.

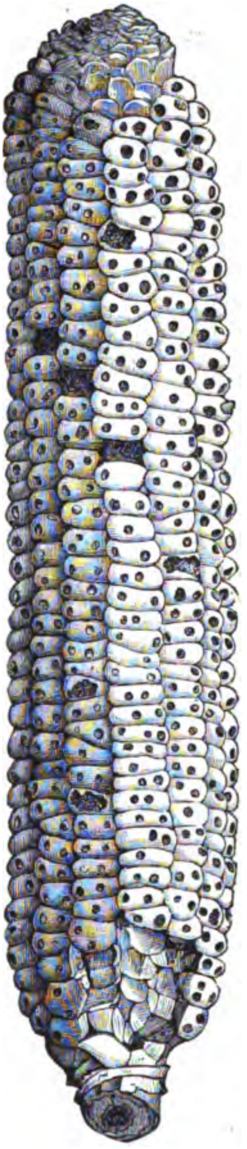

Fig. 2.

DISCUSSION.

Mr. Ratliff. I must say that I like the address of Prof. Webster. I want to know something about wire worms. We had a lot of ground cleared about fifteen years. I broke up ten acres on one side. The first year I had an enormous corn crop. The next year I broke up ten acres more, adjoining, all thoroughly drained with tile. I also broke up the ten acres cultivated the year previous. The second crop was almost eaten up with the wire worm, while the first crop was not touched. The second year, the first ten acres I planted deep with a hand planter, and on top of this I dropped a hill and covered it with a hoe; while the worms were eating the lower grains the upper grains came up and made good corn. The next year we broke up the third strip, and there were no worms in it; the second strip was eaten up with worms. We sowed buckwheat there this season, and next year I can probably tell you what success we had with that. We want to know a remedy.

Question. What kind of land was it?

Mr. Ratliff. All black land.

Mr. McDonald. I have had some experience in this matter, and met with the same difficulty spoken of by Mr. Ratliff. As a remedy we should fertilize our soil by applying manures. This swamp land seems to contain an acid and is sour, and the second year it would not raise anything; the worms got in my corn and eat it up last year.

Mr. Smith, of Jennings Co. This wire worm exists to a great extent, and we have suffered much from it. The remedy is what we want. I have been in the habit of breaking up old pastures for corn. Where I have practiced fall plowing it seems to stop them, and I believe this is the remedy.

Mr. Sieg. We have not been troubled with the wire worm except in low places where water stands. Our remedy is to use commercial fertilizer, which destroys all the insects, especially red ants. We put a little phosphate in the hill, which destroys them. We have a quick growth, and the corn soon gets out of the way of the insects.

Mr. McDavis. I have been farming for forty years and suffered much last year from these insects. In our country it has become universal that the second crop on table land is more or less injured by insects. We usually plow our clover fields and put in corn, the second crop being always injured by these pests. We have found no remedy as yet. I am in hopes fall plowing will do it. I want to hear from those who have had any experience on table land.

THE MANAGEMENT OF AGRICULTURAL FAIRS.

BY JASPER N. DAVIDSON, OF CRAWFORDSVILLE, IND.

This subject is discussed so much at the annual fairs and is so familiar to all, it may seem impossible to bring out any new ideas. Indeed the object of this paper is merely suggestive, to bring forth a free interchange of thought and comparison of methods. In order that the discussion may result in general good we must divest ourselves of personal prejudices and intolerant opinions, recognizing that there are exceptions to the results as well as the application of all rules. Societies should not be organized for the promotion of agriculture alone, but to stimulate all industries in the district or county where located and to elevate the general character of the people. The aim of the organization should be to show in an attractive manner, the products of every general or special branch of industry peculiar to the locality, and, so far as practicable, to bring out the result of new experiments. To make an annual exhibit of this kind best conducive to the general welfare opens a wide field on "ways and means." So diversified are the interests of the exhibition, the rules of the association and the rights of the spectator, all the principles of a free government must be employed in the proper management of a week's fair.

Topically, we shall first consider the fair circuit, the object of which is to arrange consecutive dates for a given number of fairs, enabling exhibitors to show continuously and conveniently and to get cheaper transportation. The efficiency of the circuit may be greatly improved by the adoption of common rules of government embracing entries, awarding committees, stock passes, forage, straw and the time of closing the exhibition. Premiums and corresponding stall rent should be determined by the will of each society.

Agricultural societies are all organized under the general law—they all strive to accomplish a common result, and while we are aware that no inflexible rules can be applied, we believe there should be more conformity in their general government.

We are now ready to attend the fair proper, and stop first at the gates for information. Entrances should be double in order that all may keep to the right. Where numerous and heavy hacks are run, a special way of exit should be provided, and drivers required to follow the rule. Accidents and much delay may thus be avoided. A gate for footmen apart from the main entrances adds much to the comfort of visitors, and relieves the overtaxed gate-keepers. All gatemen must be firm in dispute yet obliging in everything. Where there are a variety of tickets and passes issued, a small frame containing one of each should hang near for comparison and convenience. The family ticket is almost a relic of the past, and the sooner it becomes extinct the better. Tickets should be as nearly uniform as possible. For county or district fairs one twenty-five-cent ticket should be required for a single or double team, for any vehicle and for each individual beyond a certain age. A coupon ticket with the date of each day of the fair thereon, to be detached for each entrance, should be issued and sold to the owners and exhibitors of live stock for fifty cents. Exhibitors of valuable machinery and general merchandise not competing for premiums should have passes of uniform color, bearing the owner's name written with ink, provided the property exhibited is worth a certain stipulated sum. A round heavy ticket, to be worn on the coat, should be issued to assistants and grooms giving them the freedom of the inside grounds. Associations can not afford to issue outside passes—this has been faithfully tried, and whatever good may have resulted was more than counteracted by the abuse. Well disposed people can easily accommodate themselves to the rule, and the society does not care to please others.

We come next to the sale of privileges, which should be under the control of the general superintendent, who may choose an expert subordinate. More tact, system, good judgment, and, we may add, patience, are required in this department than probably any other. Many men, to increase the immediate revenue, frequently sell the most sightly and eligible grounds to hucksters, shows and the like, and visitors are forced to conclude that their comfort and convenience are of secondary importance. Our best societies do not admit games of chance, immoral shows, " Peter Funk " auctions, or intoxicants of any kind, and will not sell exclusive privileges to stands or individuals. All advertisements on the bulletin boards should be consistent with the restrictions placed on privileges. The society should see that no extortion is practiced in the sale of feed or straw. We are aware that probably seven out of ten of our premium lists say that straw will be furnished free. Well, why not be generous about it and add corn, hay and oats, as all have a mercantile value? The cry of "more straw" is familiar to all fair managers, and the prodigal abuse of this favor calls for reform. One-half the amount used would generally suffice if paid for by the exhibitor.

The men employed on the police force should be capable of governing themselves under any circumstances and on all occasions, men who can use authority without abuse and exercise discretion in their general deportment. A too common sight on entering a fair ground is a policeman armed with a club, giving orders in stentorian tones. He takes particular pains to tell the incoming stream of people where they *can not* go, and *can not* hitch their teams, irritating and confusing strangers to such an extent that they begin to wonder if there is *any* place for them and doubt the sincerity of the courteous invitations extended by the society. Bullies employed in this capacity can do much toward bringing an association into disrepute. Their opportunities are such that they may exert a wonderful influence on your success or failure, and it is well to hire men, *not* simply because they seek employment, but on merits in keeping with the character of your highest officers.

Having disposed of the gates, privileges and police, we turn our attention to the condition of the grounds, buildings, stalls and track. These should all be placed in good order the week previous to the fair. Enough unforseen things occur and emergencies arise during the days of preparation to tax the patience of the officers and workmen, without having to attend to a general renovation. The water supply must be especially mentioned in this connection. Let it be abundant and convenient at whatever cost, and do not wait until your "big day" to attend to it. This lack frequently occasions much annoyance and permanent injury to the society.

Assuming that all things are in readiness, we will now consider entries, which should close at Tuesday noon, excepting speed horses. All entries should be made by and in the name of the *bona fide* owner or authorized agent, admitting no exceptions for any article or animal. No entry fee should be charged in any class save the speed ring. Fruit, vegetables, grain and seeds must be grown during the year unless otherwise stated in the list, and must be entered only by the producer. The fair proper should close on Friday, giving exhibitors an opportunity to move and secure property during the week. It is desirable for stock department superintendents to place all animals of one breed in the same group, but it is much easier done on paper than on the ground. Good in theory but bad in practice. Many entries fail to come, others have large exhibits of different breeds and don't want stock separated. In fact, so many conflicting interests arise that the rule, though good in general, is hard to apply to the letter. No end of dissatisfaction arises from moving stock once located. Payment of stall rent should be required at time of entry. It shows good faith on the part of the exhibitor, and is a binding contract as to number and locality on the part of the society. Delivery of stalls, particularly, should not be made until paid for, and then only for purposes specified in the entry books.

Awarding committees in every department should be put to work early in the week. It insures more general satisfaction, and the task is less irksome. On no account must the halls be closed while committees are at work, as practiced in some places. Many persons have but a few hours in which to see the fair and are thus defrauded of attractive features. In the ladies' department there is frequently just complaint of partiality, arising from the fact that much of the work and many of the committees come from the town where the exhibit is made. Since fairs are so largely dependent on the support and patronage of country people, an opportunity for partial awards must not be allowed. It will quickly curtail your entries and defeat your best efforts at securing general displays. To obviate this we suggest that all superintendents of women's work be reqnired to select their committees outside of the town. When guests from a distance, or entire strangers, on good recommendation, can be procured, the result will be satisfactory. We offer the suggestion because it is a matter too often neglected, though worthy of much attention.

Of late years much has been said in regard to the "expert system," but the experience of many societies in this direction is not flattering. Experts, as a rule, confine themselves to one breed, and when that breed is brought into competition with others, the one-judge method fails. If carefully selected for the especial purpose, a committee of three, two to act and the third to decide in case of disagreement, meets all practical requirements. It is a safe and expeditious plan and should be adopted by every association trying to keep step with the advanced ideas of the day. The exhibitor of live stock is an expert old stager, well posted as to the weak and strong points of exhibits in his line, and will quickly note any incompetency in a committee. Therefore it is incumbent on every society to spare no trouble or expense in securing the best and most capable men. This rule applies to the selection of judges in every department.

The race course is literally and figuratively dangerous ground, and we shall enter into no lengthy discussion of its merits and demerits. If the rule of precedent is a good one, argument will point to the examples of ages, as shown by the ancient history of all nations—not the horse race of the present, yet games, contests, chariot races, and wrestling-matches, so closely allied that the love of amusement seems to have been a fundamental attribute. Americans are proverbially a sport-loving people, and while we deplore the bad influences and all evils connected with the speed ring, we may be thankful that nothing worse than a horse race is required to satisfy the public appetite. Compared with other times and other countries, where human life and limb are sacrificed, it is a mild form of entertainment. That it is right to develop the best capabilities of the horse for speed is certainly beyond dispute. Though it is abused and carried to an excess, we have now only to deal with it as an existent quantity until public taste and public morals eliminate and replace it by something more elevating and refined. "Honest speed for honest money," should be the aim and demand of every society. The track should be even and smooth. If too hard, use the harrow freely; if too soft, apply the roller. It should be fenced on both sides to insure safety and good government, and where practicable or even possible, no vehicles should be allowed within the circle. During the race the gates should be closed and none but drivers and grooms allowed on the course. All national rules should be strictly enforced by a firm and gentlemanly starter. Where there is a lack of entries to fill a race it is best to declare it canceled. Owners of speed horses frequently imagine the success of a fair depends on their coming and it is well to disabuse their minds of this idea.

A well-regulated amphitheater or grand stand is an attractive feature and adds much to the comfort of the people. The admittance fee of ten cents is a mere trifle and eagerly paid by people desiring a good seat and a pleasant time. It should be so located that all guests while seated can see the entire track. Good and numerous ushers should provide seats and close the doors when all are taken. Prohibit smoking, boisterous talk and the sale of cigars and lemonade. Require all to be seated during a race. Provide passes for women with children. Require your starter to place the names of entries with time and position on a bulletin board at the judges' stand. It is also well to have mounted marshals cry the time and winner around the track. Observe these rules and you have a home-like place where families and social parties can rest and thoroughly enjoy an afternoon. Rowdies and sporting men can not tolerate its pure atmosphere and it is soon frequented by only the best people.

The newspapers say "it pays to advertise" and fair associations are no exception. It costs a large amount of money at best, and all unnecessary outlay should be discouraged. Experience has proved that large flashy posters are an extravagance. Those of ordinary size suitable for stores, shops and cross-roads give better returns. Print a large number of premium lists, add an extra thousand to your usual number at a small cost, and distribute them well in your own county. A list mailed with compliments to an individual assumes the form of a personal invitation. During the summer, have all your local papers publish items and notes concerning the coming fair. By this means you reach a large number of people at a small outlay. The circuit should agree to pool the cost of posters, each society being entitled to a given number.

Local jealousy is a wedge which has divided many prosperous and useful associations, and arises from a number of causes. One prolific source is the purchase of an extra amount of stock by one man who expects thereby to control the management. This is prevented to an extent by limiting the number of individual shares, but could be further overcome by allowing no proxy votes. Stock should be well distributed in the counties composing a district or in the townships of a county fair, and there should be no excess in the city or town where the fair is held. An unequal distribution of directors and superintendents will also cause trouble.

The topics introduced embrace many, if not all the stumbling blocks common to our subject. The association which advertises judiciously, which keeps up a healthy competitive interest, which pays premiums in full, which is managed on business and moral principles, will annually have its grounds crowded with the best elements of society seeking the great object lessons so carefully prepared for their benefit and instruction. It is said that all good things live in literature, and while the agricultural fair is yet to be recognized by the historian, poet or novelist, it is no less a national institution bearing directly on the most important interests of our American commonwealth.

DISCUSSION.

Mr. Seward. It was expected, from the reading of that paper, the author would tell us something that would bring out a discussion regarding fairs. We want more information about the management of them. It is a well-known fact that fairs are seldom in readiness on the opening day. I have no knowledge of ever attending one where the exhibition was in readiness at the proper time. There should be an exact time when no further entries can be made, or goods brought on the grounds. We usually have the largest crowds on Thursday, and many do not come until then. We should be ready for business by

Tuesday morning of the fair. I am in favor of having rules to that effect, and enforce them to the letter. This rule should also apply to county fairs.

Mr. Cumback. I am not informed as to what authority the State Fair has over county fairs, but some, I suppose. At all events, it can determine and say whether county fairs can be represented here by delegates. The gentleman alludes to admitting games of chance and intoxicants on fair grounds during the holding of fairs. If this association has any power to prevent this it should be done. Any county that will allow such games of chance and intoxicants on their fair grounds should not have a seat in this association, and I suggest that some declaration be made by this convention to eradicate this evil from our county fairs.

Mr. Balyeat, of Lagrange County. I am much pleased with the suggestions set forth in the address, and much more might be added to it. Mr. Cumback speaks the truth when he says the county is not worthy a seat in this body that allows drinking and gambling. My convictions are that the gambling institutions must go, or the fairs fail. This year I was offered various prices for gambling privileges. I refused the offers. Gentlemen, this is an important subject, and I want to hear from you regarding it. The revenue derived from this source is something, but the influences are bad. Our county is full of young men. They come here and learn to gamble and drink. If these evils can be excluded from our fairs it will be worth far more to us from a moral standpoint. I am interested in the young people of our country, upon whom depends, in the future, the success of our nation.

Mr. Gilpin, of Jay County. Some persons in our county thought we could not carry on a fair without admitting games of chance, as it is a source of much revenue. However, we did not permit any gambling, and our receipts were greater than before, and we had the most orderly fair we have ever held. We published in the papers quite extensively that such would not be permitted on the grounds, and the results were as I have stated.

Mr. Smith, of Jennings County. I think this is an important question. If we can arrange to avoid gambling at the fairs we will have done much good. In our county we held a successful fair in every particular, except this one thing of gambling; liquor we have long driven from the grounds. Last year we received $600 for gambling privileges, and year before last $700 or $800. We must get rid of these things and carry on our fairs to do some good. I hope this Board will take some action in the matter and pass a resolution urging every county in the State to abolish it.

Mr. Cotton. The county societies are children of the State society, and each one should have a delegate at this meeting.

Mr. Cumback. Unless they file a report they can not have a right in this body. We have a right to say who are delegates in this body.

Mr. Seward. The State law provides that the president of county associations, or authorized delegate, shall be a member of this Delegate Board. (Here Mr. Seward read extracts from the law bearing on the subject.)

THE LABOR QUESTION.

HON. JNO. Q. A. SIEG, CORYDON, IND.

In presenting this question it is not my purpose to enter into any discussion of strikes and their causes, or the benefits or disadvantages to be gained through trades unions or any other labor organizations, but mainly to try to show to the laboring man of this country, that not only has his advantages and conditions vastly improved, but that he has kept full pace with the man of means, or his employer. Standing at the head of the list are his educational advantages. No matter how poor the laborer may be, although he may not pay one cent of tax, the man of means has erected near his home good comfortable school houses, furnished with faithful, competent teachers, for the purpose of placing all, rich and poor alike. on an equal footing in this regard. It is here the race of life begins; position or means have nothing to do with the result; but pluck and energy determines the contest. Your boy, although but a wage laborer, with pluck and determination, in a few short years may become the employer, and the boy of the man of means may become the wage laborer.

Not only is this so, but the road to honor and renown is equally open and clear to all, and those at the bottom of the ladder, as they ascend, very likely will meet some descending, who for a period held a position on the topmost round. But in all candor I say to you that these advantages are not to be attained without great effort, nor by sitting in the rear of a saloon playing cards for who shall pay for the drinks, or engaging in abuse of those who have made these things possible for you.

Secondly, your position socially has made equally rapid strides in improvement. The laborer is no longer looked upon or classed as the mudsill of society; but your sons, or many of them, are becoming leaders in the progress of social refinement, and your daughters have taken on more chastity and virtue, and in social refinement can scarcely be distinguished from those who a few short years ago looked down upon them with disgust and contempt.

A few years ago if a young man of a family of means and wealth wedded the daughter of a laboring man he was immediately ostracized and ignored by his wealthy relatives and more than likely disowned and disinherited by his parents; but to-day, if she be chaste and refined, she is taken into the family circle and treated with due deference and respect.

Thus the former idea that wealth alone should determine the social standing of the classes is being happily obliterated, and that of intelligence, social refinement, chastity and virtue is being supplanted in its stead. And right here let me add that it entirely depends upon you and your efforts to continue the advantages that you, by your manly efforts and by the generosity of the men of means, have attained.

Now, in thus addressing you I am not speaking to the poor deluded tramp who walks up and down the country imagining that he is escaping the hard lot of the laboring man, when in fact he is doing a greater amount of labor than any real laboring man, in proportion to the amount of food and comfort he obtains; but I am addressing the man whose aim it is, by an intelligent application, to make labor honorable, and thus break down the false line that separates intelligently directed muscular labor from intelligent mental labor.

It is generally claimed by the laboring classes that they are at the mercy of men of wealth. Now this is entirely a mistake. If the laborer manages intelligently to place his labor on the market, capital becomes just as dependent on him as he is dependent on capital, each being equally intelligently managed. Now this being the case, you can plainly see that capitalists by their disinterested expenditures of wealth in building the school house at your door, and by furnishing teachers for all alike, have raised you up to a level with themselves, each equally dependent, one upon the other, for success in life.

But you say to me what have you as farmers, in a farmers' convention, got to do with all this? I say to you that the farmer is equally interested with labor and capital in the problems of life. The farmer, the manufacturer, and the laborer desire steadiness of prices, needing, as they do, to make their arrangements for years ahead. The cotton mill requires much time for its construction, and for the collection and organization of the labor required for the work therein. The preparation of the furnace or the rolling mill demands long periods of exertion and large expenditure before its owners can reap reward. When these have all been built up; when the comfortable cottages around them have been filled with eager intelligent laborers; when the smoke begins to pour from those massive chimneys; when the steady clink of machinery therein is heard, and when the shrill whistle that summons the crowds of eager people to their labor echoes throughout the land, the intelligent farmer well knows that that means a market for all the fruits of *his* labor. But when the mills cease to move; when the whistle no longer calls the laborers to their work, that same farmer knows that his fatted bullock will stand unmarketed in the stall; that his potatoes will rot in the bin, and the wheat will accumulate unsold in the garner, because that same laboring man has nothing wherewith to buy. Thus you see that all our interests demand that we should strive to maintain harmony in our ranks. And in all our endeavors we should not attempt to build up our own individual interests at the expense or destruction of those of others with whom we have such intimate relations, or upon whom we are so directly dependent for our well being and prosperity.

Again, we should not attempt to control others who meet with us in competition in the battle of life; neither should we allow others to control or dictate to us our line of action, but in order to maintain our complete independence, we should by all means retain a perfect individuality, depending entirely upon our own intelligence, thus making whatever occupation we follow one of thought and care, using the great and noble powers which God in his beneficence has seen fit to so bountifully bestow, that men of all other vocations in life will be glad to accord to us a place within their circle, and extend to us the hand which for years they considered us unfit to grasp.

You say that this all sounds very well, but have we not the right to unite or organize, the same as the manufacturer or those who purchase labor? I say emphatically, yes. But yet, as a farmer, no other farmer has any right to dictate, or try to control me in my affairs, or say to me what amount I shall pay to the man that labors for me. Neither has any other one who has labor to sell the right to dictate to the man who sells labor to me what price he shall put upon that labor. That is a matter to be agreed on as between us; it becomes a matter of negotiation where our best intelligence in the matter must be brought into play and we must determine for ourselves the amount we can afford to take and the amount we can afford to pay, and when this is agreed upon then no other person or persons have any legal or social right to interfere in the matter. Now, in conclusion, let me say to you, improve your condition in every way possible; if you are controlled by men who would at your expense make their own lives, lives of ease and luxury, emancipate yourselves from under their control. Build for yourselves pleasant homes where you can surround yourselves with some of the luxuries and enjoyments of life. Demand justice and grant the same to all with whom you come in contact in solving the problems of life. By so doing you will be able to command the respect of all the great and good, and place yourselves in a position to receive the great honors to which your services to the community entitle you.

AGRICULTURE AS A SOURCE OF PROSPERITY.

BY COL. J. B. MAYNARD, INDIANAPOLIS.

Mr. President and Gentlemen:

In accepting the invitation of Hon. Alex. Heron, Secretary of the State Board of Agriculture, to address you, I also accepted the subject which he suggested, "Agriculture as a Source of Prosperity," for any remarks I might choose to make on this occasion. I am not more embarrassed than a man of my years ought to be, when coming before an intelligent, practical body of men, to discuss topics with which they are entirely familiar.

I am not an agriculturist, and yet, strange as it may appear, I consented, without hesitancy, to place myself in a position to be criticised, and, favorably or otherwise, I must take the usual chances.

It is now about forty-seven years since I quit farming; I was then familiar with the plow and the hoe, as also the cradle and the flail, old-time implements, long out of use and almost lost to memory. I knew farm life as it was fifty years ago in Illinois, pretty thoroughly, and I have not forgotten it. But in the performance of my task on this occasion, I do not propose to recite reminiscences of my farm experience, though it be a cherished poem of my memory and a joy forever.

The proposition that agriculture is a source of prosperity will not, I apprehend, be controverted. I am not required, therefore, to occupy your time by offering proof. It is as self-evident as that the sun is the great source of light and heat. But to what extent agriculture is a source of prosperity is, I conclude, a question eminently worthy of consideration.

Agriculture has been defined as "the art of disposing the soil in such a manner as to make it produce in the greatest abundance and perfection those vegetables which are useful to man and the animals depending on him for subsistence." It has been written that "Agriculture is the most ancient, the most universal and the most important of the arts," indeed, "the basis of all other arts, and has been, in all countries, coëval with the first dawn of civilization." Hence, there is no civilization, no art, no commerce, no manufactures, no schools, where there is no agriculture. This being absolutely true, agriculture ought to have great dignity as an occupation, and statistics which relate to agriculture, if compiled with care, should command the attention of the most exalted statesmanship.

To what extent agriculture is a source of prosperity in the United States at present, and what it is to be in the near future, leads first, and naturally, to inquiries relating to land.

The area of the United States and territories, exclusive of Alaska, is, in round numbers, about 1,980,000,000 acres. I have no means of knowing the extent of the arable area, but for convenience will place it at one-half of the total area, say 990,000,000 acres. Of this amount there were improved in 1880, say 300,000,000 acres, leaving 690,000,000 acres yet to be improved and made productive.

I do not suppose that the discussion of the land question should be made a prominent feature of this address, but it should be understood that the prosperity of the country, in so far as agriculture contributes to the general fund, results from the cultivation of the land, and it is becoming more and more patent, every year, that the public welfare demands that land shall be in the hands of those who will cultivate it, for only by such a policy can agriculture, as a source of prosperity, achieve its greatest success and confer its greatest blessings.

There are numerous sources of prosperity, as for instance, manufactures, mining, quarries, petroleum and the fisheries. Agriculture, confessedly, stands first in the list. Commerce, transportation, banking, etc., are in a certain sense sources of prosperity, but are of secondary importance as compared with those which I choose to discuss. According to the census of 1880, there were in the United States and territories:

4,008,907 farms with improvements, valued at		$10,197,096,776
Farming implements, valued at		406,520,055
Live stock, valued at		1,500,464,609
Total investment in agriculture		$12,104,081,440
Investments in manufactures	$2,790,227,606	
Investments in quarries	25,414,497	
Investments in petroleum	27,395,746	
Investments in railroads	2,613,606,264	
Investments in fisheries	37,955,349	
Investments in mines	546,000,000	
		6,040 644,462
Excess of investments in agriculture		$6,063,436,978

If we are to estimate the importance of agriculture, as a source of prosperity, by the amount invested, as compared with other sources of prosperity, there will be little hesitancy, I conjecture, in awarding it the first place in the list.

I assume that the importance of agriculture, as a source of prosperity, may be prudently estimated by the number of persons it employs, as compared with other sources of prosperity. By consulting the census reports of 1880 I find that—

	Persons.	*Persons.*
Agriculture employed		7,670,493
Manufactures, mechanical trades and mining employed	3,837,112	
Railroads	218,389	
Quarries	3,937	
Petroleum	12,501	
Fisheries	131,426	
		4,233,365
Excess engaged in agriculture		3,437,128

The number of persons engaged in all kinds of occupations in 1880 amounted to 17,392,099, and as I have shown, 7,670,493 were engaged in agriculture, or 44.1

per cent. of the entire number; and these agriculturists, be it remembered, excepting the contributions of the fishermen, fed not only themselves but the 43,085,290 of their countrymen who were not food producers, and this done, they contributed of their surplus products to feed half of Europe.

I have no desire to unduly magnify agriculture as a source of prosperity, but I deem it prudent to group a few more figures calculated to do agriculture simple justice. I hope I shall not weary your patience by reciting statistics. I know it is dry oratory, but you are practical men; I am plowing for facts, digging to lay foundations. The census report for 1880 says there were 284,771,642 acres of improved land in the country; for convenience I have said 300,000,000 acres.

These acres in that year produced as follows:

	Bushels.
Indian Corn	1,754,591,676
Wheat	459,483,137
Barley	43,997,445
Oats	407,858,909
Buckwheat	11,817,327
Total bushels in 1880	2,697,580,089

Such was the product with only 300,000,000 acres of improved land; but I have said that there are 990,000,000 arable acres in the United States. When the entire area is under cultivation, or, to use the census term, "improved," what will be the product of the cereals I have named? Manifestly, if 300,000,000 acres produced 2,697,580,089 bushels, 990,000,000 acres will produce 9,000,000,000 bushels, say:

	Bushels.
Corn	6,100,000,000
Wheat	1,300,000,000
Barley	113,000,000
Rye	69,000,000
Oats	1,300,000,000
Buckwheat	58,000, 00
Total bushels	9,000,000,000

I will not be understood to mean that the entire area of improved lands will be devoted to the crops I have named, but that the proportions I have indicated will be maintained. In contemplating such sum totals, agriculture, as a source of prosperity, expands to such stupendous proportions that extravagance of speech becomes difficult, if not impossible. I confess to a growing interest in my subject as I proceed. The figures I have given are convincing. They dignify agriculture. They place it irrevocably in the lead, challenge comparison, and silence controversy.

Keeping in view the proposition that the ratio of production will be in proportion to the land under cultivation, I proceed to show the product of certain crops in 1880, with estimates of what they may be when all the arable acres of the county are improved. For convenience the estimates are in pounds:

	Pounds in 1880.	*Pounds when all the Land is Improved.*
Rice	110,131,373	385,460,805
Irish Potatoes	10,167,452,340	38,686,083,190
Sweet Potatoes	1,668,934,660	5,541,271,325
Sugar	224,000,000	784,000,000
Molasses.	280,000,000	980,000,000
Cheese	27,272,489	68,181,222
Milk	5,300,000,000	18,550,000,000
Butter	777,250,000	2,723,750,000
Total pounds	18,555,040,843	68,018,746,542
Cotton	2,877,679,500	10,071,878,250
Wool	155,681,751	544,886,128
Hay	70,411,424,000	246,437,984,000
Hops	25,546,378	89,412,323
Tobacco.	472,661,157	1,654,314,049
Total pounds	73,942,992,786	258,798,474,750

I confess that such vast aggregates bewilder my mind, and yet they are as mathematically certain as that if one acre of land will produce fifty bushels of corn, two acres will produce one hundred bushels. Contemplating the figures, agriculture, as a source of prosperity, dwarfs to insignificance all other sources of prosperity known to the science of political economy. But there are still more figures required to tell the story of the importance of agriculture. The live stock item must not be omitted. It would be like playing Hamlet without permitting Hamlet to appear. The cattle on a thousand hills and on a thousand plains must be estimated. The live stock in the country in 1880 amounted to 130,969,581 head. I propose to show that the number will increase in proportion as the arable area is improved, that is to say, if with 300,000,000 improved acres there were 130,969,581 head of live stock, with 990,000,000 acres of improved land there ought to be approximately 457,293,793 head, as follows:

	In 1880.	*When all the Land is Cultivated.*
Horses	10,357,488	36,151,208
Mules and Asses	1,812,808	6,344,828
Working Oxen.	993,841	2,477,843
Milch Cows	12,443,120	43,551,280
Other Cattle	22,488,550	78,706,925
Sheep.	35,192,074	123,176,259
Swine.	47,681,700	166,885,450
Total	130,996,581	457,293,793

It occurs to me that, as a source of prosperity, agriculture has passed the limit of rivalry, and that comparisons need not be introduced. Still, there are a few more items which I regard of sufficient value to have a place in my address, notwithstanding the fact that the census-takers omitted them from their reports: It is shown that in 1880 there were in the United States 4,008,907 farms, the more important products of which are given. Referring to the definition given of agriculture (that it "is the art of disposing the soil in such a manner as to make it produce in the greatest abundance and perfection those vegetables which are useful to man, and the animals depending on him for subsistence"), I am of the opinion that the census-takers should have omitted no one item in the list of food products. In endeavoring to supply some of these omissions, I shall, for the sake of easy calculation base my estimates on 4,000,000 farms. It should be understood that these 4,000,000 farms range in area from 3 acres to 1,000 acres and over; hence, I assume the small farms include what are usually called gardens. And why it is that the products of the small farms, or the gardens, and not given, must remain a matter of conjecture. Manifestly, if we are to have full comprehension of agriculture, as a source of prosperity, we must have the small things with those of more showy proportions. Why not pumpkins and turnips, beets and melons? Why omit cabbage, poultry, chickens, ducks and turkeys and eggs? There is no good reason why. As well omit counting cents, nickels and dimes when seeking to know the profit or loss of trade ventures.

I assume that the 4,000,000 farms in 1880 produced:

	Tons.
Pumpkins	1,000,000
Turnips	2,000,000
Cabbage	400,000
Beans	250,000
Melons	300,000
Total	3,950,000

Or, 7,900,000,000 pounds. I estimate that the average number of chickens to the farm is 100; turkeys, 10; ducks, 5; geese, 2—giving aggregates as follows:

Chickens	400,000,000.	Average weight, 3 lbs	1,200,000,000
Turkeys	40,000,000.	Average weight, 6 lbs	240,000,000
Ducks	20,000,000.	Average weight, 3 lbs	60,000,000
Geese	8,000,000.	Average weight, 5 lbs	40,000,000
Total	468,000,000	Total pounds	1,540,000,000

I will assume that of the chickens—hens more properly—200,000,000 were egg producers, and that during the year they laid fifty eggs each, giving a sum total of 10,000,000,000 or 1,000,000,000 pounds, or 500,000 tons of eggs.

My task is to discuss agriculture as a source of prosperity, and the facts which demonstrate the vast superiority of agriculture requires no rhethorical display. They challenge for their full comprehension all the powers of the mind.

But there is an idea abroad in the land that there are many arts, occupations, professions, or employments, more dignified and desirable than agriculture—in common parlance, farming. To remove this idea, or rather vulgar caprice, from the minds of those who are afflicted with it, an occasional reference is made to

Cincinnatus, the famous old Roman, who, when he was elected a Roman Consul, was engaged in practical farming—plowing, perhaps. Cincinnatus was a conspicuous figure in Roman affairs in his day. As a statesman he held first rank, and he was doubtless as great a farmer as he was statesman, but whether consul or dictator, he resigned office at the earliest day, practicable, for the pleasures and profits of farming. But the beautiful lesson taught by Cincinnatus, does not, in these later days, to any very great extent, influence officeholders. If any of them ever resigned office to go back to farming, provided the farm had been abandoned for office, writers of biography have failed to discover the fact. Nor does the example of the old Roman more favorably impress the mind of the average student of the agricultural college of the times. Cincinnatus as a Roman Consul or Dictator, inspires ambition, but Cincinnatus driving a yoke of oxen and holding a plow is not captivating.

I think it would be vastly interesting to the agriculturists of Indiana to know approximately how many of the graduates of the State Agricultural University have honored their *Alma Mater* by adopting agriculture as a profession. I apprehend the number would astonish the State by its smallness. It somehow happens that agricultural colleges manage to educate their students in such a way that agriculture, as a profession, is not fascinating. If these students are taught that agriculture as an art or a science is dignifying and elevating, they seem to forget the lesson when they take their departure.

Just here I remark that notwithstanding agriculture is the chief source of prosperity; notwithstanding it is coëval with the dawn of civilization; notwithstanding it is the basis of commerce, transportation, manufacturing, banking, etc., and notwithstanding it is the leading occupation of the country, it is seldom that an agriculturist like old Cincinnatus is called to take any very prominent part in the affairs of the state or nation. And it may be that this fact has much to do in deciding the course of students of agricultural colleges when required to choose an occupation.

If you will examine the record of the Forty-eighth Congress, you will find there were 401 members of the Senate and House; of these there were 273 lawyers and 12 farmers; there were 14 manufacturers, 16 merchants and 11 bankers; there were 46 members whose occupations are not given, and I confess to a temptation to put them down as farmers for the credit of the greatest source of prosperity that the country possesses. And now what do we hear? Senator Beck, of Kentucky, in his recent great speech in the United States Senate, delivered on the 22d of December, said:

"There can be no dispute as to the fact that there must be something wrong in the management of public affairs when the ports of great nations like Germany, France, Austria and other countries are arbitrarily closed against our cattle, hogs and other food products, without, as the President tells us in his message, present prospects of reasonable change. It is not a healthy condition of things when wheat, hogs and other farm products, debarred from foreign markets in retaliation, because of our protective tariff, sell at home for prices which will barely pay the cost of production. As to them, certainly protection does not protect. The great American agricultural industries, which give employment to more than half of the workers for wages, whose welfare is held up (properly so) as the highest aim of legislation, and whose products constitute at least 80 per cent. of our exports, *receive no real consideration here*, and are not *even ranked among the industries of the country* over which Congress is asked or expected to throw its protecting arm."

Such is the bold declaration of a United States Senator, telling the country that in Congress, agriculture "*receives no real consideration*," and that in great state papers it is not "*even ranked among the industries of the country*."

I have shown that in 1880, the investments in agriculture amounted to $12,104,081, 440, and that manufactures, quarries, petroleum, railroads, fisheries and mines had investments amounting to $6,040,644,462, showing an excess in favor of agriculture of $6,063,436,978; and yet we are told that agriculture *receives no real consideration* in Congress, and that it is not *ranked among the industries of the country.*

I have shown that agriculture proper employs 7,670,493 persons, while the other employments named employ but 4,233,365, showing an excess in favor of agriculture of 3,437,128 persons. And yet agriculture, says Mr. Beck, receives *no real consideration in Congress.*

Do not such statements indicate a great wrong? Can agriculturists comtemplate them without feeling deep humiliation? But, is it strange? In the Forty-eighth Congress there were 273 lawyers and 12 farmers.

When agriculturists (I like the term farmers better) survey the field they will notice that what is facetiously called the "American Navy" has a Department, with a Secretary who is styled a "constitutional adviser" of the President. This whole navy, which costs annually from $15,000,000 to $20,000,000, is not worth one year's crop of navy beans. This navy has not only a Department and a constitutional adviser of the President, but an academy where young men are taught, largely at the expense of farmers, the art of naval warfare. This navy is not a source of prosperity. The academy is an establishment where officers are manufactured, of whom there are now about 2,500 commissioned, about 9,500 men and boys, and marines, to say nothing of the brass bands. It was never reported from Washington that this navy never had any real consideration in Congress, as Mr. Beck says agriculture never had; on the contrary, there is a ceaseless din kept up over the navy. Ships, tugs, monitors, big guns, torpedoes, admirals, rear-admirals, commodores, midshipmen, etc., eternally. It may not be wise to complain, but agriculture, with its $12,000,000,000 investments and more than 7,000,000 working men, agriculturists, who supply eighty per cent. of all the country's exports, have no real consideration in Congress, and their vast interests and this vast army of men have about a dozen representatives in Congress.

Agriculturists visiting Washington will also find, without difficulty, the War Department. This Department has, like the Navy department, a Secretary who is a "constitutional adviser" of the President. It costs the country from $32,000,000 to $40,000,000 annually. It has charge of an army, all told, of about 26,000 men—about ten men to each officer. It has an academy where more officers are annually manufactured, hundreds of whom have nothing to do but go on dress-parade and draw their pay.

But when agriculturists visit Washington, they will search in vain for the Department of Agriculture—agriculture has no real consideration in Washington.

It is not even ranked among the industries of the country. When the President calls around him his constitutional advisers to wrestle with some great or small problem of state craft, agriculture is not represented. It has no voice. It has, I believe, a bureau tucked away somewhere, and what is called a commissioner, but neither the commissioner nor his bureau cuts any figure or influence in governmental affairs.

It occurs to me that this condition is to be attributed, chiefly, to the lethargy, the supineness of agriculturists. They certainly have the power to increase the number of farmers in the Senate and in the House. With twelve farmers in Congress, agriculture will never have any real consideration; it will never take its proper rank in the legislative and executive affairs of the country.

If, as I have endeavored to show, agriculture is the greatest source of prosperity the country possesses, it is, I apprehend, still more conspicuously Indiana's greatest source of prosperity. According to the census of 1880, Indiana had 194,013 farms, containing 20,420,983 acres, of which 13,933,738 acres were improved.

The value of these farms, including fences and buildings, was . . .	$635,236,111
Value of farm implements and machinery	20,476,988
Value of live stock.	71,068,857
Total investment.	$726,781,857

I see by the report of the Bureau of Statistics for 1884, that the value of agricultural products is estimated at $155,085,663. These figures, I assume, demonstrate that Indiana's greatest source of prosperity is agriculture, and this being admitted, it becomes interesting to note the high estimate the last Legislature placed upon agriculture. I think the Legislature agreed to pay for printing 5,000 copies of the report of the State Board of Agriculture, at a cost, say, of $2,500—or 250,000 cents—which would be an average expenditure to the 194,013 farms of about one cent and two mills to the farm, and these reports, if distributed, would come within 190,013 of giving each farm a copy; and just here comes in a fact worthy of some consideration: There were in the last Legislature thirty farmers—six in the Senate and twenty-four in the House. I have stated that in 1880 the agriculturists had invested in Indiana $726,781,857. An appropriation of $2,500 was made to print the report of the State Board of Agriculture! Now, I would like to have a member of a "Sigma Chi" or a "Gamma Delta" fraternity of Purdue tell me what per cent. of $726,781,857 the Legislature appropriated to inform the farmers, through the operations of the State Board of Agriculture, what agriculture is doing for the State of Indiana. I am satisfied that the per cent. is so small that it would require a microscope of astounding magnifying power to see it. For magnificent illiberality it takes the premium.

What, I ask, is the theory upon which this parsimony is based? It is a humilating, degrading theory. It is that farmers don't read; that they care little or nothing about the literature of agriculture, nothing about it as a science, and when Indiana has a Legislature with thirty farmers in it, and only $2,500 is appropriated to publish 5,000 copies of its Agricultural Report, I confess to you, it does wear the appearance that agriculture in Indiana has few friends, and that they exert mighty little influence upon legislation. It occurs to me that what Mr. Beck said of agriculture in Congress applies with equal force to agriculture in the Legislature of Indiana; that it has no real consideration and is not ranked with the industries of the State. These thirty farmers who were members of the last Legislature cost the State more than $15,000 of which the farmers paid about $12,000, and they get back an appropriation of about $2,500. With such blind watchfulness, with such vigilant neglect, it is not surprising that agriculture has no constitutional adviser in the President's cabinet nor anywhere else. It is not surprising that the sons of farmers abandon the farm. Agriculture has no governmental recognition in the States or in the Nation, nor will it have until farmers themselves make the demand, and mass their power to extort compliance. I have read much in my day upon subjects partaining to agriculture, glowing descriptions of farms and farm life, verdant meadows, bearded wheat and tasseled corn, lowing herds, etc., to the end of the chapter. To extol agriculture as the companion, the avant courier of civilization, as the art which makes all other arts possible, a source of prosperity without a rival, is well enough; it is right and proper, because they are great truths; but when we see agriculture without proper recognition in Legislative bodies, when we see its great interests neglected by the State and Nation, when we see it abandond by graduates of so-called Agricultural Colleges, when we read a President's message and find no reference to agriculture as a source of prosperity, we know that something besides pyrotechnic oratory is required to give to agriculture its rightful place in the affairs of government, and the recognition its importance demands.

Indiana is justly boastful of her educational system, of its elevating and refining influences. It is no longer regarded sufficient that the youth of Indiana shall be able to read, write and cipher. As a consequence, we have high schools and universities. The idea is to equip the youth of the State for the higher walks of education, literature and science. The programme is popular, and is growing in public favor. I like the policy. It means not only thorough education but complete education. It means strength and beauty—the useful and the ornamental. It means that in the homes of Indiana there shall be culture and refinement, a taste for and an appreciation of the beautiful in art and nature.

May I not ask why it is that every rural home—every farm home—in Indiana is not surrounded by evidences of refinement? Why it is that the grounds surrounding these homes are not beautified by ornamental trees and flowering shrubbery? Why it is that the gardens are in the wrong place, and offensive to the eye? Why it is that there are evidences on every hand that fruit culture is neglected? Is not the answer to such inquiries found in the fact that horticulture is yet to fight its way to a place in the regards of the people of Indiana? Indiana has a Horticultural Society. Does the State foster it? Is it anywhere in favor, except with the few, who are striving under many difficulties to make Indiana as renowned for fruit as it is for corn, wheat and cattle? What did the last Legislature, with its thirty farmers, do for horticulture? It said the Horticultural Society might print a report of 400 copies, once in two years, at a cost of about $250, and for other purposes the magnificent sum of $400 was appropriated, a total of about $525 a year.

I have said that the Legislature agreed to pay for publishing 5,000 c Annual Report of the State Board of Agriculture, costing about $2,500; th the appropriation for the Horticultural Society, including the publication of i ennial report, constitutes for agriculture and horticulture an appropriation o about $3,000 a year. Does that look as though agriculture had warm, devoted and influential friends in Indiana? Does such decrepit liberality and such stupendous stupidity indicate progress, or any appreciation whatever of the importance of agriculture as a source of prosperity, or of horticulture to advance the fruit producing interests of the State, or to beautify the rural homes of the people? Who is responsible for this humiliating condition of things? I answer, agriculturists themselves. In 1880, Indiana had 331,240 of her population engaged in agriculture; of these 280,370 were males between the age of 16 and 59 years; deduct 25,370 for minors, and you have 255,000 voters who could, if they would, stand by their own interests and demand that instead of the paltry number of 5,000 copies of the Report of the State Board of Agriculture, there should be 20,000 copies published, and that instead of 400 copies of the Report of the Horticultural Society there should be 4,000 copies. Why not? Who pays the great bulk of the taxes? Do not the revenues come chiefly from the farmers? If so, why not give back to agriculture a sufficient sum to spread broadcast over the State all desirable information relating to agriculture and horticulture? True, the agriculturists of Indiana did send thirty of their number to the last Legislature, and it is interesting to note what great things they did for agriculture as compared with some other interests.

Mr. President, in reading the transactions of the State Board of Agriculture, on yesterday, I noticed the statement: "The entire amount of money contributed by the State during" the past twelve years is not equal to the amount granted for one single year to each of our four neighboring States, Ohio, Michigan, Wisconsin and Iowa.

I think such statements coming from unquestioned sources demand serious consideration. Had I the time I would analyze them to the core. The press of the State, if it would devote attention to them, would find them worthy of its high abilities. I have only time to refer to Michigan. In 1880 that State had 154,008 farms against Indiana's 194,013 farms. Michigan had 8,296,862 acres of improved land and Indiana 13,933,738 acres. Michigan had $574,242,654 invested in agriculture, while Indiana had $726,781,857 invested, and $152,539,203 more than Michigan, and yet we are told that Michigan does more for agriculture in one year than Indiana does in twelve years. Michigan would, therefore, do more for agriculture in twelve years than Indiana would do in one hundred and forty-four years. How long can Indiana face such funeral music as that? How long can Indiana afford to march with bowed head in the grand procession of progress? I answer just as long as the agriculturists of Indiana will remain content to receive from the Legislature the enormous sum of one cent and two mills to the farm—just as long as they will consent to publish 5,000 copies of the proceedings of the State Board of Agriculture, which is virtually saying the agriculturists of Indiana are content

exert m
Bec
th
have not the independence to protest when their
ndeed, sir, this state of things will continue as long
members of the Legislature demonstrate their in-
rests they are supposed to represent.
change? Will the State agricultural colleges so
y will prefer agriculture to law, physic and theology?
ure, a race of educated, scientific farmers, capable of
heir occupation anywhere and everywhere, where men
l station meet to discuss public affairs? Is agriculture
lawyers in legislative bodies, where laws are enacted or
repea r to come when agriculture shall have a representative
in the Cabinet o dent of the United States? In a word, are agriculturists, freed from the trammels of party, ever to unify, that they may give to their occupation, which is the great source of the Nation's prosperity, the dignity and influence which rightfully belongs to it? Who can answer? I shall not attempt a reply. But, Mr. President and gentlemen, in fancy I anticipate the dawning and the full orbed noon of an era when agriculture will regain its primal dignity and glory.

We read, sir, that God himself planted the first garden. He fixed its boundaries. Each fruit-bearing tree and each flower-bearing shrub took its place in the garden, "eastward in Eden," by the direction of Jehovah, as certainly as the stars with which he decked the skies. We think of God as the builder of the universe, of suns and planets, and of systems of worlds, but it should be remembered that he came down to earth, not as on Sinai, amidst thunder and lightning, but in Eden, where he planted a garden and then placed Adam in it to tend it. Here, then, and I say it reverently, we have the Creator and Adam, proprietor and tenant, engaged in the first agricultural and horticultural enterprise of which history supplies an account. Hence I claim for agriculture a heaven-ordained rank, a primal exaltation such as belongs to no other occupation known to the human family.

I claim for agriculture, as an occupation, inherent qualities, best adapted to the development of the physical man, body and brain—an occupation promotive of virtue, and best calculated to sublimate the affections and yield the largest harvests of human happiness. It is an occupation pre-eminently suited for study, for mind growth and mind power. It is an occupation distinguished for integrity and independence, contentment and happiness, which no other occupation confers in such rich abundance.

Sir, I anticipate a period, not remote, when young men will esteem it an honor to be known as agriculturists, scientific tillers of the soil, and when agriculturists, by their learning, their abilities and their influence, will compel the acknowledgment that agriculture, by the vastness of its investments and untold contributions to the wealth of the country, is entitled to distinguished recognition in the affairs of government.

Then what of the farms? Do the nations inquire?
And what's the response that comes from the fields,
Where the sun and the rain with farmers conspire
To make the earth proud of the stores that she yields?
The voice of the wheat, and the voice of the corn,
Mellifluous as the songs of the spheres,
Have been heard in all time, since the diluvian storm,
Saying: "Seed time and harvest shall come with the years,"
While God's covenant bow the storm-clouds adorn.
While the rivers shall roll their floods to the sea,
The song of the wheat and the song of the corn,
Rehearsing Jehovah's eternal decree,
Shall hush into silence the nation's alarms
By extolling the blessings of farmers and farms.

DRAINAGE.

BY PROF. J. L. CAMPBELL, CHIEF U. S. GEODETIC SURVEY FOR INDIANA.

The swamp lands of Indiana are properly grouped into three classes, which are widely different in their formation, and which require very different methods for their drainage. These classes may be designated as—first, table lands; second, elevated valleys, and third, low lands.

The *table lands*, generally, are the flat woodlands, at the sources of the rivers and creeks of the State, and are residuary portions of the original level plain which characterized the State at some older era.

The *elevated valleys* include the great marshes through which flow the crooked low-bank streams, like the Kankakee, the Monon, the upper Tippecanoe and the Yellow rivers.

The *low lands* are the marshes at the mouths of the chief tributaries of the Ohio and Wabash rivers, and the swampy tracts which border on Lake Michigan.

The most generally accepted theory of the surface formation of this State supposes that at the close of the geologic period of crust-making, during which the valuable limestones and coal were produced, the era of cold deposited here a great glacier, which, by its slow erosive force, smoothed down the surface to a plain, gently sloping to the westward from a maximum elevation above sea level of thirteen hundred to about nine hundred feet. On this glacier surface, and within the limits of four hundred feet of difference of level, all the table land marshes are to be found.

Toward the close of the glacial period the melting ice formed vast shallow rivers, which furrowed out in the glacier surface the elevated valleys, where all of the second class of swamp lands are situated.

The Kankakee marsh is about seven hundred and twenty feet above sea level at South Bend, and about six hundred and thirty feet at the Illinois State line.

The Little River marsh is nearly eight hundred feet above the ocean at Fort Wayne, and about seven hundred and forty at its lower end near Huntington.

The Collett glacial river, which extended south from the central part of the State quite to the falls of the Ohio River, was an important factor in the surface-making of that portion of the State. A similar but much smaller glacial stream gave character to the uplands along Sugar and Coal creeks.

After the ice period, water and air took up the work of topography and have diligently and faithfully continued this work to the present time.

The rain drop, the rivulet, the creek and the river have done the carving which gives the pleasant diversity of hill and valley which characterizes the State.

The lowest erosion by water in the State is at the mouth of the Wabash, where the surface elevation is three hundred and twenty feet above sea level.

All the variations of surface in Indiana are included within a general limit of one thousand feet, between the elevations three hundred and thirteen hundred feet above the ocean.

The grand system of drainage, the product of natural forces undirected by man, begins with the Ohio River as the primary outlet for more than three-fourths of the State. A small part of the State, east and northeast of Fort Wayne, is drained to Lake Erie; another part, along the central northern section, to Lake Michigan; and a third limited area to the Mississippi by way of the Kankakee.

The Ohio channel has been furrowed out five hundred feet below the general glacial level, and has a gentle slope and easy flow, except at the falls from Jeffersonville to New Albany, which justify its well-known name, the beautiful river. The fall in the river from Lawrenceburg to the mouth of the Wabash is 121 feet, the sea level at Lawrenceburg being 434 and at the mouth of the Wabash 313 feet.

Next of importance in size and vastly superior in its general relations to the drainage of the State, is the Wabash. The Wabash takes its rise in Ohio and enters Indiana in the northeast corner of Jay County (sec. 3, tp. 24 n., r. 15 e.) at an elevation above sea level of 800 feet (estimated). The river flows northwest to Huntington, where it receives the Little Wabash. The elevation above sea level at Huntington is 715 feet. Below Huntington the general direction of the stream is west and southwest to Williamsport and then in a general southern course to its junction with the Ohio.

The following table shows the elevation of the Wabash River above sea level at different points:

State line (east), estimated	800
Huntington	715
Mouth Salamonie River	667
Mouth Eel River	583
Mouth Tippecanoe River	516

Montezuma	474
Terre Haute	449
State line (west), estimated	430
Vincennes	414
Mouth White River	376
Mouth Wabash River (Ohio River)	313

Scarcely inferior to the Wabash itself, in its relation to channels for water-flow, is its chief tributary, White River, whose general direction is in a remarkable degree parallel to the Wabash.

The two streams struggle alike for the rivulets in the high table-land flats of Randolph and Jay counties and start on their even course across the State and down toward the lowest corner, the Wabash gaining the nominal victory by retaining its name below their junction, which is only fifty miles north of the Ohio.

The following table shows the elevation of White River above sea level at different points:

Winchester	1,053
Muncie	946
Anderson	749
Noblesville, estimated	730
Indianapolis	691
Gosport	554
Bloomfield	490
Washington	425
East Fork Junction	396
Mouth White River (Wabash)	376

From these tables it will be seen that White River is a more rapid stream than the Wabash, having a difference of elevation of 677 feet from Winchester to its mouth, while the Wabash has, from the State line east to the mouth of White River, a difference of 424 feet.

Both rivers, however, are splendid channels for drainage, running from the upland marshes of the glacier surface through possible glacial valleys, into the lower deposits until they excavate deep lines three or more hundred feet below the original level plain.

Into these main channels the subordinate little rivers, creeks and rivulets enter. Every valley in the State is but a ditch in the great drainage system which nature, unaided, has kindly made. The further extension of this natural system is the practical engineering problem which we are to discuss.

The State of Indiana occupies the most favorable location for successful physical development, and the results of the seventy years of effort since the first settlement of the State fully justifies the great expectations.

The climate between the parallels of latitude 37° and 42°, which include the State, is the best part of the temperate zone. Here is the western limit of the timber section of the country; the soil is of unsurpassed richness, and the material for good roads is abundant. Here are the finest limestone deposits in the United States; the clays and kaolins are of the best quality, and the coal is not inferior to the other great bituminous deposits in the Union.

Our population now is nearly two millions, and this may be doubled in a much shorter period than has passed since the count was begun if we are willing to make the most of the resources at our command.

This advancement primarily depends on the improvement of our farming lands, adding to the productiveness of lands now tilled and making it possible to cultivate sections which now are dismal swamps.

Your attention, therefore, is directed to these swamp lands, according to the divisions or classes already given—the table-land marshes, the elevated-valley marshes, and the low lands.

TABLE-LAND MARSHES.

The table-land marshes are found in different parts of the State, and are parts of the original glacier plain. Whenever a section is found in the State where the elevation is above one thousand feet, it may be safely asserted before examination to be flat land, and if large enough will be a marsh.

The section in the eastern central counties which gives elevations above one thousand feet, and where the Wabash and White rivers rise, is flat table land, and where unreclaimed is marsh. From Jay and Randolph through Henry and Rush, Decatur and Jennings to the flat woods of Jefferson north of the city of Madison these elevated flats may be traced.

Like a great dividing ridge this table land separates the waters of White River and the Wabash. The flat marshes of Grant, Howard, Tipton, Clinton, Boone, Hamilton and Hendricks counties belong to the upland group. The deepened channels of White River and the Wabash, southwest of Indianapolis, with their tributaries, have for the most part removed the original surface in the counties south of those named, but it is yet found in the hill tops of Morgan and Brown, Bartholomew and Jackson, in the knobs of Washington, Clark and Floyd, and across the Ohio in the Muldraugh hills of Kentucky.

The magnificent views from some of the hill tops of Bartholomew and Brown counties, and from the knobs, have misled many persons as to the relative elevations of these sites, but it is well to remember that Weed Patch is not so high above sea level as McCoy's Station or Sunman on the C., I., St. L. & C. Railway, or Summit, near Big William's Creek, on the C., H. & I. Railway, or the top of the grade west of Centerville, on the P., C., St. L. & P. Railway, or the bed of White River at Winchester. Everywhere in the State at this elevation of nine hundred feet or more, the same general characteristics may be observed, and except where later agencies have effected drainage, always swampy.

Even on the tops of the knobs where the conditions are least favorable, wherever a few undisturbed acres are found, there, also, is a little upland marsh. This kinship of the hill tops of the southern part of the State with the great marsh lands of the more northern portions is a very interesting feature in the topography of the State.

North of the Wabash the upland marshes are found along the limestone dividing plain, which is a yet unexplained geological feature, extending from Huntington through Cass, White, Jasper and Newton counties, towards Joliet, Illinois. The plain widens to the east and includes a large part of the northeastern portion of the State.

The characteristic lake features of this section of the State are readily explained by the burrowing action of the slow moving glacier, which generally was reducing the surface to a plain; yet, here and there, like the deep holes in an ordinary stream, this broad ice flow hollowed out the basins for Maxinkuckee, Cedar Lake, Lake Manitou, and the hundreds of smaller lakes which so pleasantly mark this part of Indiana.

DRAINAGE OF THE UPLANDS.

The methods adopted for the drainage of the uplands include the removal of the obstructing brush growth and fallen timber, and the constructing of straight open ditches, varying in width and depth according to the special requirements in each case.

The liberal ditch laws of the State provide the methods by which these improvements are made, and while in some cases the taxes imposed are burdensome, the great good secured in general more than counterbalances any special hardship or inequality. Large sections, in all parts of the State, which once were marshes, now constitute excellent farm land; swamps are converted into fields, and the productive acreage of the State has been greatly increased.

The tile makers are benefactors to the State, and their wares should be scattered in the most generous manner for additional drainage to the open ditches or natural ravines.

In many localities the top soil of the upland marshes is a cold clay, almost impervious to water, and which of itself is poor land. Beneath this clay, however, is a porous soil mixed with sand, which, after a few years, can be brought to the surface by judicious farming. Still deeper, usually sand and gravel are found. I once suggested in an article on this subject, that in some localities where this underlying gravel is well diffused, that an easy and cheap method of drainage could be adopted by vertical tiling, extending from the surface to the clear gravel. The tiling should be of liberal size and the openings carefully kept open. Nature often resorts to this sort of engineering for drainage purposes. We may find excellent illustrations of this system in the sink-holes in the flat lands of Orange and Washington counties. Wherever these sink-holes become obstructed, ponds appear. These sink-holes, in the limestone regions, are the surface marks of the underground streams, which at some earlier period formed the caves of these sections of the State. I do not doubt if these surface marks were carefully mapped, the course of these hidden streams could be accurately traced.

THE ELEVATED VALLEY MARSHES.

The second group of swamp lands is the high valley system, which constitute a special topographic feature. By appointment under His Excellency, Governor Porter, I made for the State, in 1882, a survey of two of these great marshes, the Kankakee and the Little River.

The Kankakee and its tributaries drain over sixteen hundred square miles of the State of Indiana, and its improvement should require more outlay than the owners of the land are able to contribute. The territory included in the marsh lands is a broad, nearly level plain, varying in width from one to twenty miles. It has been stated before that this plain is seven hundred and twenty feet above sea level near South Bend, and six hundred and thirty feet at the State line on the west. The banks of this marsh are sand ridges, rising to a hight of thirty feet above the plain.

The soil of this section is sandy, with underlying strata of clay and gravel.

In reference to the formation of the Kankakee marsh and the crooked river, which flows through it, I made the following statements in my report to Governor Porter in 1882:

"The broad valley of the Kankakee marsh is doubtless the result of glacial action. At the close of the glacial period, we may suppose that a shallow river extended from bank to bank of the valley. This stream had a slope of about one foot to the mile, and a consequent velocity rapid enough to take up the particles of fine sand and carry them forward. The retardation along the borders would cause the deposit of the sand, and thereby make the stream more narrow by the formation of banks. The narrowed and deepened stream would have an increased velocity, and hence other masses of sand would be taken up by the current and carried forward to form obstructions in the general direction of flow. Following the lines of least resistance, the channel would be diverted from its original direction and would change from straight to crooked, and continue to change so long as the velocity was too great for the stability of the sand bed over which the river flows. By these processes, doubtless, the sinuous Kankakee was formed; and its present length, with its many windings, approximately determines the velocity consistent with permanence in the wide marsh which it now so imperfectly drains.

"The formation of the timber line along the river may be explained in like manner.

"During freshets the low lands would be overflowed, and the soil and sand brought down by the increased current would be deposited, first along the banks of the river; thereby raising the surface next the stream enough above the level of the marsh to permit the seeds of trees to grow, which would not germinate in the swamp itself."

If these statements are correct, as I think they are, it is evident that the present crooked stream is the result of natural forces, adapting themselves to the conditions of soil and slope through which it flows, and the problem of the drainage of the marsh is a very different problem from the drainage of the table-land marshes already discussed.

THE IMPROVEMENT.

In my report I said that the drainage and recovery of the Kankakee marshes will include: First, the construction and maintenance of a better main channel than now exists, for the flow of the river; second, the straightening and deepening of the beds of the streams which empty into the main stream; and, third, the digging of a large number of lateral ditches through the swamps to the improved channels.

In reference to the first of these improvements, the construction and maintenance of a new channel, I then urged, and I wish now to emphasize, that the expense should not be borne by the owners of the land, but by the State or General Government.

The improvements of the tributaries of the chief river, and the ditching of the swamp itself, after the main channel has been made, is all that should be taxed to the land.

This new main channel will require a large outlay in the beginning, and a continued expense for a number of years. On this point I reported as follows:

"If we assume that the river now has an approximately stable bed, the result mainly of the free action of natural forces on the sandy soil, it is evident that any increase of velocity will affect this stability and introduce a disturbing element which will require special attention.

"The banks of the new channel will likewise deliver quantities of sand into the current until they assume their proper angle of rest and are protected by grass or other vegetable growth.

"The lateral ditches, also, will bring down masses of sand which will, if left uncared for, form bars where these ditches empty into the river.

"To meet these difficulties it will be necessary to keep at work one or two dredging machines until the new channel has assumed a partially stable condition.

"Grass grows most luxuriantly in all parts of the Kankakee valley, and from this cause we may expect that the banks will be covered very rapidly. After the drainage has been once accomplished and the lands brought under cultivation, there will be a great diminution of the volume of water to be carried off.

"The absorbent power of the reclaimed land and the evaporating surface will be increased, and the quantity of surplus water will be proportionately diminished.

"The diminished volume will give a relative increased capacity with less depth, and thus by degrees the new channel will become stable, while at the same time it fulfills all the requirements for complete drainage."

I here repeat the opinion I heretofore expressed, that the General Government should at least remove the rock obstruction at Momence, Ill., and the bordering counties and the State at large pay the larger part of the expense of the improvement of the main channel.

If it is not foreign to the purposes for which this Board is organized, I would ask that a resolution be adopted requesting our Senators and members of Congress, unitedly, to endeavor to obtain an appropriation from the General Government for the purpose of improving the Kankakee River between Momence, Ill., and Baum's Bridge, Ind.

This subject has been before Congress heretofore, and I believe that a survey of the Momence obstruction was ordered, but nothing further has been done, doubtless owing to the want of interest in the matter on the part of our own congressional delegation.

If this suggestion, or some modification of it, could secure also the active support of our State officers, this support would go far towards securing the desired appropriation.

The Allen and Huntington County marshes, along Little River, include about twenty-five thousand acres of land. The general conditions and formation of this do not differ materially from the Kankakee, except the slope is greater and the distance much shorter.

I am glad to report that the enterprising citizens in Allen and Huntington counties are now perfecting their plans for the recovery of this valuable section. The results of this improvement will prove the possibility for the greater work along the Kankakee.

LOW LANDS.

The third class of marshes in this State includes the low lands, which exist in limited areas along the larger streams of the State, chiefly where these streams empty into other and larger ones, and also in the region which borders on Lake Michigan.

The river marshes are the result of the overflow of the rivers themselves, and the obvious remedy is in damming and not in ditching. Usually the soil is sandy, and consequently will be rapidly drained by absorption and evaporation if the encroachments of the rivers are prevented.

But here a new engineering problem is presented. The tile drainage of the farms, the hundreds of miles of open straight ditches, the removal of the heavy undergrowth, and the clearing out of the channels of the creeks have destroyed the storage reservoirs which kept up the water supply for our rivers and have reduced their average size to less than half what they were sixty years ago. No commission in our day would select the site for the State capital where it now is on account of the navigable importance of White River.

This decay of our rivers is not due to any important change in climate or rainfall, but may be charged directly to drainage. Yet to lament this loss would be to wish for the return of the pioneer days, whose only real enchantment is that which distance lends.

These surface improvements, however, have so increased the volocity of all the tributaries, from tile drain to the creek, that the carrying capacity of the river is overtaxed and the danger from floods is greatly increased.

The beds of the rivers also have received a large amount of material from the lateral streams so that the original channels are partially filled. This also adds to the danger from freshets.

These floods, of late years, have diminished the value of bottom lands along the Ohio, Wabash and White rivers, and many tracts, once farmed, are now thrown out as worthless.

The recovery of these lands, and the general drainage of the low lands along the rivers, is of very great importance and is also entirely practicable.

The proper improvement of a river requires that its double charac nized—its ordinary flow and its flood.

The ordinary flow within its banks, with its graceful windings and gentle rent, is the river which needs no care except to move the driftwood and beauti its banks. The straightening of this channel is vandal engineering and in the end will result only in defeat. The length and direction of a river are determined by natural laws and shortening will violate these laws only to create disturbance where now are repose and stability.

The flood may be characterized as another river over the ordinary one. This second river is temporary in character and should be gotten rid of as speedily as possible. For this flood river as straight a channel as possible should be made, and an earnest God-speed to the parting guest provided.

The proper provision evidently is the construction along the general line of the ordinary river of open and straight channels of sufficient capacity for the floods. The bottom of this flood river is the level of the ordinary banks in the valleys and the protection necessary is in new banks or levies in as direct lines as possible far enough from the ordinary banks to furnish ample space for the upper river.

It is easy to calculate the capacity required on the basis of the highest floods heretofore experienced, and the lands outside the flood banks relieved from all danger of overflow.

The error frequently committed is in the attempt to confine the stream to the ordinary channel by raising the adjacent banks. This error is even worse than the other already referred to in the straightening of the ordinary river.

The whole theory may be stated in a single sentence: first, let the natural channel alone; second, make the flood channel as straight as possible and with capacity in excess of the highest freshet hitherto experienced.

Attention to these primáry principles possibly might be of service in the improvement of the Mississippi.

After the overflow of the river has been prevented, the adjacent marsh lands will generally become tillable—and in some cases, in localities where lands are very valuable, the Dutch method of drainage by pumps and wind mills may be employed.

This method doubtless would be of value for the recovery of some of the low lands which border on Lake Michigan.

DISCUSSION.

Mr. Mitchell. Last season the Gibson County Fair Association erected a fountain. We dug a well abount 28 feet deep, over which a tank was built to supply the fountain. On Saturday preceding the fair an engine was put to work to pump water in the tank, which held about 110 barrels. Sunday before the fair a rain came, the clay banks become soft and we feared the tank might tip over. In order to get the water back into the well we placed a hose in the tank, which was about 14

This sub
the Mom
less o
de

ground, and put one end in the well,
drawn in five minutes and did not fill
an under current in that well. The
is a very practical one, judging from
ner.

ong will this channel of the Kankakee
amage will result following the new

present length of the Kankakee in this State is two and forty miles—the proposed new channel will be eighty miles. It is impossible to say, in advance, what will be the whole effect of shortening the distance. As I stated in my paper, a straight channel tends continually to become crooked. The increased velocity of the stream will disturb the banks and bed; more sediment will be taken up and carried forward, to be in turn deposited in the direction of the flow. Whenever there is any decrease of velocity, and until the river accommodates itself to its new conditions it will be necessary to keep dredges at work to keep the channel in good order. The Kankakee River bed should be cared for by the Government, and the surface drainage by the owners of the lands.

Prof. Latta, of Purdue University. The question of the drainage, not only of that portion, but other portions of the State, is a question of paramount importance; other improvements can not go on until this improvement is made. The fact that we have basins to drain into, and to clean out the tile occasionally, does not deter us from going into tile drainage. It seems to me we should ask for a national appropriation from Congress for that purpose.

Mr. Lockhart. I have been much interested in drainage. The law provides a penalty for obstructing ditches already made; we have had trouble in this respect in our section of the country. In building fences across these drains, farmers will obstruct them by driving in stakes to prevent hogs from passing. This has been practiced to such an extent that some farmers have talked of prosecuting.

SOME SONG-BIRDS OF INDIANA.

MAURICE THOMPSON, STATE GEOLOGIST AND CHIEF OF THE DEPARTMENT OF GEOLOGY AND NATURAL HISTORY OF INDIANA.

Birds have been inhabiting Indiana from a time far antedating the advent of man, at least we may assume that they have, from the testimony of geologic records found in regions comparatively near to us. The labors of scientists like Marsh, Owen and Milne Edwards have set before us a vast mass of facts, affording a means of seeing, as through a glass darkly, the long, devious and mysterious route down which the birds, through incalculable ages, have wandered to the light of the 19th century.

The evolution of the song-bird, so far as we can trace it, has been wrought from some obscure source in a reptilian life and organism. Step by step, from monstrous bat-winged, lizzard-mouthed, reptile-boned forms, we may trace the bird from its first rudiments of existence, so to speak, down to its present perfection of form, plumage, structure, colors and voice. The voice comes last and is the crowning achievement of Nature in bird development. In fact, the first grand change in the march of evolution, by which the bird struggled toward song-life, was the taking on of plumage. Then came a great improvement in vertebral structure; next the perching feet were perfected and better wings; then came the keel-shaped breastbone and the perfecting of the spinal column; the teeth disappeared, the wings came to be what they now are, and then followed color, and lastly the *syrinx* and song.

If you will take the trouble to examine any genuine song-bird, you will find that it possesses all the following marks:

1. Perching feet, that is, feet suited to a free life among the branches of trees.
2. The *tarsus*, or ankle (or shank), covered on each side with a horny, laminated plate, forming a sharp ridge behind.
3. Primaries (or pinion feathers), ten in number, the first one, however, very short and sometimes almost undiscoverable.
4. The voice is always clear and musical (in true songsters) on account of the development and command of the lower larynx or syrinx.

It would seem, taking as our guide all the facts we are able to gather, that we may correctly assume as contemporaneous achievements of evolution, the perfecting of the song-bird and the appearance of man upon earth. In other words, about the time that the birds had reached their present full-throated power of song, man got ready to listen and be glad; and I must suggest just here that no man who will examine the geological evidence of the awful struggles the birds have passed through, in order to make themselves ready to serve him, will be found willing to wantonly destroy them.

From the remotest period of man's history, if we may trust the testimony of literature, the wisest minds have studied the birds and the greatest souls have been stirred by their music. The voice of the turtle is heard in the Old Bible; the Greek, Latin, Persian, and Arabic poets loved the groves and rose-gardens where the birds were most tuneful, and all along down the "ringing groove of change," from Chaucer to Tennyson and Longfellow, the literature of our own grand language is resonant with the voices, and is filled with wing-rustle of the nightingales and the thrushes.

Birds of the sub-order songsters (oscines) are not all able to sing, in the best sense of the word. Ornithologists have included in their list of singers all the birds having a certain throat anatomy distinguished by what is called a syrinx, presumably on the theory that all birds having this organ *could* sing if they would, or, at least, if they knew how.

The *syrinx*, or song-pipe, of the highest type of birds is a very interesting and extremely complex organ, which I could not describe to you without the use of many figures and a great number of technical terms, wholly unintelligible to everybody, saving the scientist skilled in the jargon of anatomy. It is sufficient to say here that this vocal apparatus is operated in the main by five or six pairs of delicately formed muscles, so adjusted that the vocal cords and air-space are under wonderful control; hence the singing bird's voice is eminently a lower throat voice, so far as its means of generation is concerned. Any observer will readily note that all the finest songsters among our birds sing with the head thrown far back and the lower part of the throat greatly expanded. This attitude brings the *syrinx*, which is below the *larynx* proper, into the position most favorable to perfect harmony of action. I speak of this merely for the purpose of suggesting how the bird, without the advantages of any conservatory of musical art, reaches the utmost power and compasses the sweetest and purest possibilities of its voice. You send your daughters to the best masters of vocal training for years; some of them learn to sing well, others barely touch mediocrity, whilst far the greatest number never can find out the secret of what musicians call silvery resonance (timbre argentin) of voice. The song-birds, however, are not subject to change in the matter of vocal accomplishments. Every wild mocking-bird, if it sing at all, will sing divinely, making pure flute notes and piling up *staccato* passages of bewildering sweetness which Patti, Gerster or Miss Cary would give all their diamonds to equal, or trilling and quavering and dreamily rendering *legato* sketches too fine and tenuous for human imitation.

I have made a close study of the birds whose habitation is east of the Mississippi River, and I hope some day to give the world the results of a long series of very interesting dissections and comparisons of the songs and song-organs of our singing birds. I have tramped hundreds of miles in pursuit of my purpose and have made, I think, some extremely novel investigations, during the course of which, I dare say, I have found out a good deal about birds, and one cardinal truth runs through the whole of it, namely: Birds, and especially song-birds, are of the highest value to agriculture. In fact the most notable of the *oscines*, those whose vocal powers are extraordinary in point of tone, compass, volume and flexibility, are so friendly to man that they choose to linger near his abodes and become semi-domesticated, whenever he will permit it. The mocking-bird in the South and the brown thrush in the North are types embodying the chief characteristics of their sub-order. I have noted, in all my wanderings and observations, that wherever the song-birds are most numerous there vegetation is most luxuriant and healthy. In the vineyards of the extreme South—those interesting scuppernong plantations of the Gulf coast—the mocking-bird is a chief laborer, and his work is inestimable. One new-year's day of 1885 I sat on the porch of a Creole friend's cabin in Southern Mississippi and watched two mocking-birds play in the tangled vines whilst I sipped the golden wine which their tireless insect-hunting had vouchsafed to me. Kill all the song-birds and the vines will soon die. The *oscine* birds are all insectivorous, though some of them (the blue-jays and cardinal grosbeaks notably) are also somewhat given to eating grain and even flesh, whilst many of them delight in fruits and seeds. It is safe to say, however, that all the birds of Indiana, whether song-birds or not, the hawks and owls not excepted, are the friends of agriculture and should be carefully protected by rural people. Birds of prey kill annually in Indiana mice, hares, rats and large insects enough to pay twenty times over in benefits for the damage they do by eating the few victims they snatch from the poultry yard. It is a mistaken policy to kill any of our birds, except those classed as game, like the quail, the grouse, the snipe, woodcock, etc. I could give many instances coming under my own observation tending to prove that even the larger and more destructive species of hawk are beneficial to the farmer. But to return to the subject of song-birds:

The most gifted singer among our resident birds is the brown thrush (*harporhynchus rufus*) which inhabits orchards, thickets and hedges. Its voice is very sweet and flexible and its song cheerful, varied and richly musical. I select this bird as the typical one of his family (*Turdidæ*) in Indiana, from the particular standpoint of this paper, not only because he is the best singer, but because he is the least harmful, as well. He does not destroy as many bugs, caterpillars and larvæ as does the cat-bird (*galeoscoptes carolinensis*) but he is less inclined to steal strawberries and cherries, which is greatly to his credit, though much against his taste. The brown thrush, commonly called thrasher, is easily identified by his coat, which is light, cinnamon brown, his vest of mottled dark and white, his long, brown tail, and his slender, lightly-curved bill. His flight is usually short and low, and he rarely perches high save when he mounts upon the topmost spire of a tree to sing his morning song. Early in the history of American bird-study this thrush got the name of French mocking-bird, which was meant to distinguish him in the Southern States from the American mocking-bird (*mimus polyglottus*), the finest singer in the world. I am sorry that I can not feel authorized to say that the American mocking-bird is strictly an Indiana bird. That it nests in the Southern counties of our State is not enough. I have been unable to find evidence to satisfy me of its right to be called a permanent resident. As far north, however, as Nelson County, Kentucky, it is a resident. Mr. C. W. Beckham, in his report to Prof. Proctor, Director of the Kentucky Geological Survey, says of the mocking-bird:

"A few remain all the year (in Nelson County) as I have observed them in every one of the twelve months. I heard one in full song on the 8th of November."

I should say, but I do not know that it is so, that an occasional resident mocking-bird, in an open winter, may be found in the southwestern counties of Indiana, a region having many physical features peculiarly Southern.

The wood thrush (*Hylocichla mustelina*) is not a permanent resident in Indiana, but comes early, about the 25th of April, and remains till October, if the weather is not too cold. It is strictly insectivorous, a most industrious destroyer of the enemies of vegetation, especially the eggs, larvæ and moths of tree pests. As a singer the wood thrush ranks high, in so far as richness of voice goes, but its song has few notes and no variety of expression. Nothing is sweeter, however, than the half-plaintive, half-joyful ecstacy of its early-morning trills heard in the dark woods of the Wabash bottoms.

The cat-bird (*galeoscoptes carolinensis*), next to the brown thrush, is the best singer in Indiana, but he is migratory and very rarely spends the winter with us. Wherever there is an orchard, a garden of berries, a hedge or a thicket of wild bramble, the cat-bird will be found nesting and singing throughout the spring, and I may add that the wise man, who grows raspberries, blackberries and gooseberries, will take just as great care of his cat-bird as of his vines, for many cat-birds insure healthy and strong bearing vines.

The robin (*merula migratoria*) is probably a permanent resident of a very small part of our State, if it is a permanent resident at all. During very mild winters it lingers in middle Indiana till January. The Ohio River appears to be about the dividing line between its permanent and its merely summer home. The robin is a cheerful, earnest singer, but its voice is somewhat metallic, and lacks what, as I have said, musicians call *timbre argentin*, that sweetness of tone so perfectly developed in the voice of the wood-thrush and the mocking-bird. It is a warm friend of agriculture, destroying innumerable insects and it has no bad habits.

The blue-bird (*sialia sialis*) is hardly a genuine songster, and he rarely spends the winter with us; but he comes with the first hint of fair spring weather and begins his cheerful vocalization on our fence stakes, shining meantime like a blue flower or a bit of warm sky. If the farmer will observe, he will note that the blue-bird is always on hand when corn land is being broken in spring, ready to eat all the "grubs" and insect eggs and larvæ which the plow share turns up. Almost every stump, bowlder and fence post will have its blue-bird watching each new furrow and pouncing down into it as soon as the plow has gone by. The amount of good this bird does would appear incredible if it were put into the form of a detailed account.

The cardinal grossbeak or Virginia red-bird (*cardinalis cardinalis*) is irregularly resident throughout the year in the southern half of Indiana. It is a vigorous singer and unfortunately is becoming rare, on account of having been killed for use in trimming ladies' bonnets. I feel sure that the women of Indiana would prefer doing without scarlet feathers to having this splendid bird exterminated.

The orioles are summer residents in our State. There are two species, the Baltimore oriole (*Icterus galbula*) and the orchard oriole (*Icterus spurius*). These birds are the especial friends of grape vines and pear orchards, as they never tire of searching them over and over for insects. It may be added that they eat grapes, too, but they earn the right to all they want.

I need not speak of the glad notes with which in early May these birds fill our woods. A spring without the orioles would scarcely be spring.

The song-sparrow (*Melospiza fasciata*) is resident in Indiana most of the time.

All the species of this genus are especially friendly and helpful to the farmer. The voice of the song-sparrow is charmingly sweet, clear and liquid. It begins early in spring and makes the morning merry with its notes from the earliest "peep of day" till long after sunrise.

All sparrows are great insect killers as well as mighty devourers of weed seeds.

The limit of this paper forbids any specific mention of the other sparrows, the warblers, the vireos and all the rest. Indiana farmers must learn to protect their birds in every possible way. Everybody knows that we have a hundred insects harmful to our fruit trees, vines, vegetables and cereals to where we had one thirty or forty years a ago. Why? Largely because the birds are not one-tenth as numerous as they were then. I make the assertion boldly that you can not have a healthy apple orchard without plenty of birds. The same may be said of cherry orchards and the whole catalogue of fruit trees, vines and vegetables, as well as of the staple cereals. Twenty years ago a failure of the apple crop was very rare—indeed, apples were plenty every year. Now we have a failure almost every year. Why? Because trees without plenty of birds are never healthy. You can not have fruit without birds, unless you do the work of the birds yourselves. You must either suffer from failures in crops of fruits and cereals, or you must fight the insects, or you must let the birds fight them for you. Well, if the birds work for you, you must pay them their wages in cherries, berries, apples and pears and never grumble.

I made a good, old farmer call me a "crank," the other day, when I told him the reason his clover fields have failed to bear as much seed as they formerly did.

"You don't allow the bumble-bees to be killed on your farm, do you?" I inquired.

"Yes, sir; I do," he cried. "I make my boys burn up every plagued nest of them."

"So I supposed," I replied. "And that is why your clover seed fails you. Bumble-bees make clover seed."

"You're a crank! You're a crank!" he exclaimed, and looked at me as if he thought me a fit subject for the lunatic asylum. And yet it is a fact that a strong nest of bumble-bees, in a big clover field, is worth twenty dollars to the owner; for these insects are the chief agents in fertilizing the blooms, thereby insuring a heavy yield of seed. In Australia there are no bumble-bees of our kind, and the consequence is, they can not raise clover that will produce seed there until they import bumble-bees. So, if you allow the *oscines* or song-birds of our country to become distinct or weak, you must expect to see insects of all kinds muitiply with continually increasing ravages, until you have invented some artificial way of destroying them. But you mustn't call me a "crank" for telling you this! You all, or most of you, recollect that twenty or thirty years ago, when the woods of Indiana were alive with birds, all the farmers used to have plenty of pears, plums, cherries, apples and delicious cider, no matter if the birds did swarm in the orchards, and eat, and chatter, and fight over the best and ripest fruit. After a while the shotgun began its work. The farmer wanted all the fruit himself, so he watched his trees and shot the birds. The result is what you see; insect-eaten trees, wormy fruit, curculio, caterpillars, bark lice, worms, bugs, flies, everything except the grand orchards and luscious fruits of days gone by. Would you like for me to tell you how to make an orchard that will bear as the orchards did on the "old home farm" when you were boys and the birds were abundant? It is easy to do. Go this spring and plant your apple trees, pear trees and cherry trees in well prepared strong ground; then encircle the whole orchard with a thick set hedge of evergreen trees, for the birds to nest and roost in, and see to it, that no bird or nest is disturbed. So sure as you do this, and take care of your trees by proper pruning and by keeping grass and weeds away from their roots, you will see a tremendous yield of fruit, and the happiest birds in the world. But we should not regard life exclusively from the standpoint of the utilitarian. We have a higher nature, which longs for and must have free development. Art can not entirely satisfy, nor can science obliterate our craving for the beautiful. We must turn to unshorn nature, now and again, for the subtlest thrills of recreation; and what in all nature is more beautiful, more charming than a singing bird—a sentient flower, so to speak, breathing music as perfume among the green luxuriant sprays of spring.

COMPARISONS OF VARIOUS CLASSES.

BY J. M. OSBORN, OF TOLEDO, OHIO.

Comparisons of the manner in which the various classes comprising our population embrace and improve opportunities, neglect or fail in coming fully up to all privileges within their reach, presents some strange contrasts.

The good use made by many of small opportunities under hard conditions, compared with the bad use made by others under more favorable conditions, is a cause of much speculation. The difference in degrees of all that makes life enjoyable, and causes civilization to advance on the best lines, or that retard or lessen it, are of a wide and varied character.

What it is that makes and multiplies these differences, or what will prevent or decrease them, is an interesting problem that has led in all the past, and doubtless will in all the future, lead to great diversity of opinion among those who study these subjects with any interest in the course of events. Doubtless there is one class—there may be more—which may be a small portion of the whole community, that nullifies or obstructs the action of all others, as in the case of the impairment of some small portion of the large complex steam engine, which becomes useless from the injury to a small part of the whole.

Taking up the accomplishments of the various classes in connection with each other, reviewing in detail their operations, may disclose who are most worthy of commendation, and who can improve in method.

As it is believed by the well informed that clear, calm analysis, and the pointing to a better way is more likely to be profitable than criticism on, or censure for the past, the former will, so far as is consistent with fairness and truth, be the spirit and tone of this effort.

In order to throw light that will be of any practical use upon the subject, it will be best to begin with early settlement and consider primary conditions, following down the course pursued, and the action of all so far as is possible.

In this way we shall reach results and know what they comprise, and how attained. Into this State came a hardy population; none other than the hardy and resolute have successfully engaged in pioneering They came from the States of Ohio, Kentucky, Virginia, Maryland, the Carolinas, New York, Pennsylvania and New England.

They were composed of the young whose only qualifications were good constitutions and habits of industry. Among the older were some who had means, but there were many who had met financial reverses in the older States, who preferred to commence anew the battle of life in an undeveloped region rather than remain under the cloud of poverty where they had once been in better circumstances. Judged by the present standard, few if any would have been considered wealthy.

In reviewing this population and their accomplishments we will divide and subdivide into classes, mentioning first agriculturists. No one can reasonably question the propriety of this, as only fairness demands that we consider them as having been the basis of all others. All employments and enjoyments, everything of a material, artistic, educational, scientific and financial nature was originally founded upon agriculture, which, as a basis, still predominates.

In the first division we will name agriculturists, merchants, manufacturers, mechanics and artisans of all kinds. We can not drop the consideration of agriculture with the slight reference made thereto in the preceding paragraph. As it is the grand base it is entitled to further recognition. The efforts of this class are represented by cities, towns, factories, school houses, colleges, churches and numerous other evidences of civilization.

We do not think it necessary to take up your time with statistics; you have these in great perfection in the various departments. It is sufficient to say that the present generation, surrounded and supplied as they are by comforts and luxuries, have no proper conception of the early scarcity, compared with the present abundance, nor of the sacrifices by toil and self-denial that have been made in giving them what they now enjoy—they can not properly appreciate what these have been.

Everything differing from a primeval, inhospitable, unhealthy wilderness, has been brought into existence by muscular aud mechanical force, exerted and guided by an intelligence that has drawn millions from other portions of the world for the products of the soil; that is primarily and in the main, it is not to be denied that mines and forests have been drawn upon, but these would not have been as available in the absence of agriculture as they have been supplemented by it.

The vast sums that have been drawn from the soil by severe and persistent toil, and during the earlier period with implements and appliances that would now be feet above the level of the ground, and put one end in the well, and 107 barrels were thus drawn in five minutes and did not fill it, so there is undoubtedly an under current in that well. The theory of well drainage is a very practical one, judging from our experience last summer.

Mr. Davidson. How long will this channel of the Kankakee River be, and what damage will result following the new course?

Mr. Campbell. The present length of the Kankakee in this State is two hundred and forty miles—the proposed new channel will be eighty miles. It is impossible to say, in advance, what will be the whole effect of shortening the distance. As I stated in my paper, a straight channel tends continually to become crooked. The increased velocity of the stream will disturb the banks and bed; more sediment will be taken up and carried forward, to be in turn deposited in the direction of the flow. Whenever there is any decrease of velocity, and until the river accommodates itself to its new conditions it will be necessary to keep dredges at work to keep the channel in good order. The Kankakee River bed should be cared for by the Government, and the surface drainage by the owners of the lands.

Prof. Latta, of Purdue University. The question of the drainage, not only of that portion, but other portions of the State, is a question of paramount importance; other improvements can not go on until this improvement is made. The fact that we have basins to drain into, and to clean out the tile occasionally, does not deter us from going into tile drainage. It seems to me we should ask for a national appropriation from Congress for that purpose.

Mr. Lockhart. I have been much interested in drainage. The law provides a penalty for obstructing ditches already made; we have had trouble in this respect in our section of the country. In building fences across these drains, farmers will obstruct them by driving in stakes to prevent hogs from passing. This has been practiced to such an extent that some farmers have talked of prosecuting.

SOME SONG-BIRDS OF INDIANA.

MAURICE THOMPSON, STATE GEOLOGIST AND CHIEF OF THE DEPARTMENT OF GEOLOGY AND NATURAL HISTORY OF INDIANA.

Birds have been inhabiting Indiana from a time far antedating the advent of man, at least we may assume that they have, from the testimony of geologic records found in regions comparatively near to us. The labors of scientists like Marsh, Owen and Milne Edwards have set before us a vast mass of facts, affording a means of seeing, as through a glass darkly, the long, devious and mysterious route down which the birds, through incalculable ages, have wandered to the light of the 19th century.

The evolution of the song-bird, so far as we can trace it, has been wrought from some obscure source in a reptilian life and organism. Step by step, from monstrous bat-winged, lizzard-mouthed, reptile-boned forms, we may trace the bird from its first rudiments of existence, so to speak, down to its present perfection of form, plumage, structure, colors and voice. The voice comes last and is the crowning achievement of Nature in bird development. In fact, the first grand change in the march of evolution, by which the bird struggled toward song-life, was the taking on of plumage. Then came a great improvement in vertebral structure; next the perching feet were perfected and better wings; then came the keel-shaped breastbone and the perfecting of the spinal column; the teeth disappeared, the wings came to be what they now are, and then followed color, and lastly the *syrinx* and song.

If you will take the trouble to examine any genuine song-bird, you will find that it possesses all the following marks:

1. Perching feet, that is, feet suited to a free life among the branches of trees.
2. The *tarsus*, or ankle (or shank), covered on each side with a horny, laminated plate, forming a sharp ridge behind.
3. Primaries (or pinion feathers), ten in number, the first one, however, very short and sometimes almost undiscoverable.
4. The voice is always clear and musical (in true songsters) on account of the development and command of the lower larynx or syrinx.

It would seem, taking as our guide all the facts we are able to gather, that we may correctly assume as contemporaneous achievements of evolution, the perfecting of the song-bird and the appearance of man upon earth. In other words, about the time that the birds had reached their present full-throated power of song, man got ready to listen and be glad; and I must suggest just here that no man who will examine the geological evidence of the awful struggles the birds have passed through, in order to make themselves ready to serve him, will be found willing to wantonly destroy them.

From the remotest period of man's history, if we may trust the testimony of literature, the wisest minds have studied the birds and the greatest souls have been stirred by their music. The voice of the turtle is heard in the Old Bible; the Greek, Latin, Persian, and Arabic poets loved the groves and rose-gardens where the birds were most tuneful, and all along down the "ringing groove of change," from Chaucer to Tennyson and Longfellow, the literature of our own grand language is resonant with the voices, and is filled with wing-rustle of the nightingales and the thrushes.

Birds of the sub-order songsters (oscines) are not all able to sing, in the best sense of the word. Ornithologists have included in their list of singers all the birds having a certain throat anatomy distinguished by what is called a syrinx, presumably on the theory that all birds having this organ *could* sing if they would, or, at least, if they knew how.

The *syrinx*, or song-pipe, of the highest type of birds is a very interesting and extremely complex organ, which I could not describe to you without the use of many figures and a great number of technical terms, wholly unintelligible to everybody, saving the scientist skilled in the jargon of anatomy. It is sufficient to say here that this vocal apparatus is operated in the main by five or six pairs of delicately formed muscles, so adjusted that the vocal cords and air-space are under wonderful control; hence the singing bird's voice is eminently a lower throat voice, so far as its means of generation is concerned. Any observer will readily note that all the finest songsters among our birds sing with the head thrown far back and the lower part of the throat greatly expanded. This attitude brings the *syrinx*, which is below the *larynx* proper, into the position most favorable to perfect harmony of action. I speak of this merely for the purpose of suggesting how the bird, without the advantages of any conservatory of musical art, reaches the utmost power and compasses the sweetest and purest possibilities of its voice. You send your daughters to the best masters of vocal training for years; some of them learn to sing well, others barely touch mediocrity, whilst far the greatest number never can find out the secret of what musicians call silvery resonance (timbre argentin) of voice. The song-birds, however, are not subject to change in the matter of vocal accomplishments. Every wild mocking-bird, if it sing at all, will sing divinely, making pure flute notes and piling up *staccato* passages of bewildering sweetness which Patti, Gerster or Miss Cary would give all their diamonds to equal, or trilling and quavering and dreamily rendering *legato* sketches too fine and tenuous for human imitation.

I have made a close study of the birds whose habitation is east of the Mississippi River, and I hope some day to give the world the results of a long series of very interesting dissections and comparisons of the songs and song-organs of our singing birds. I have tramped hundreds of miles in pursuit of my purpose and have made, I think, some extremely novel investigations, during the course of which, I dare say, I have found out a good deal about birds, and one cardinal truth runs through the whole of it, namely: Birds, and especially song-birds, are of the highest value to agriculture. In fact the most notable of the *oscines*, those whose vocal powers are extraordinary in point of tone, compass, volume and flexibility, are so friendly to man that they choose to linger near his abodes and become semi-domesticated, whenever he will permit it. The mocking-bird in the South and the brown thrush in the North are types embodying the chief characteristics of their sub-order. I have noted, in all my wanderings and observations, that wherever the song-birds are most numerous there vegetation is most luxuriant and healthy. In the vineyards of the extreme South—those interesting scuppernong plantations of the Gulf coast—the mocking-bird is a chief laborer, and his work is inestimable. One new-year's day of 1885 I sat on the porch of a Creole friend's cabin in Southern Mississippi and watched two mocking-birds play in the tangled vines whilst I sipped the golden wine which their tireless insect-hunting had vouchsafed to me. Kill all the song-birds and the vines will soon die. The *oscine* birds are all insectivorous, though some of them (the blue-jays and cardinal grosbeaks notably) are also somewhat given to eating grain and even flesh, whilst many of them delight in fruits and seeds. It is safe to say, however, that all the birds of Indiana, whether song-birds or not, the hawks and owls not excepted, are the friends of agriculture and should be carefully protected by rural people. Birds of prey kill annually in Indiana mice, hares, rats and large insects enough to pay twenty times over in benefits for the damage they do by eating the few victims they snatch from the poultry yard. It is a mistaken policy to kill any of our birds, except those classed as game, like the quail, the grouse, the snipe, woodcock, etc. I could give many instances coming under my own observation tending to prove that even the larger and more destructive species of hawk are beneficial to the farmer. But to return to the subject of song-birds:

The most gifted singer among our resident birds is the brown thrush (*harporhynchus rufus*) which inhabits orchards, thickets and hedges. Its voice is very sweet and flexible and its song cheerful, varied and richly musical. I select this bird as the typical one of his family (*Turdidæ*) in Indiana, from the particular standpoint of this paper, not only because he is the best singer, but because he is the least harmful, as well. He does not destroy as many bugs, caterpillars and larvæ as does the cat-bird (*galeoscoptes carolinensis*) but he is less inclined to steal strawberries and cherries, which is greatly to his credit, though much against his taste. The brown thrush, commonly called thrasher, is easily identified by his coat, which is light, cinnamon brown, his vest of mottled dark and white, his long, brown tail, and his slender, lightly-curved bill. His flight is usually short and low, and he rarely perches high save when he mounts upon the topmost spire of a tree to sing his morning song. Early in the history of American bird-study this thrush got the name of French mocking-bird, which was meant to distinguish him in the Southern States from the American mocking-bird (*mimus polyglottus*), the finest singer in the world. I am sorry that I can not feel authorized to say that the American mocking-bird is strictly an Indiana bird. That it nests in the Southern counties of our State is not enough. I have been unable to find evidence to satisfy me of its right to be called a permanent resident. As far north, however, as Nelson County, Kentucky, it is a resident. Mr. C. W. Beckham, in his report to Prof. Proctor, Director of the Kentucky Geological Survey, says of the mocking-bird:

"A few remain all the year (in Nelson County) as I have observed them in every one of the twelve months. I heard one in full song on the 8th of November."

I should say, but I do not know that it is so, that an occasional resident mocking-bird, in an open winter, may be found in the southwestern counties of Indiana, a region having many physical features peculiarly Southern.

The wood thrush (*Hylocichla mustelina*) is not a permanent resident in Indiana, but comes early, about the 25th of April, and remains till October, if the weather is not too cold. It is strictly insectivorous, a most industrious destroyer of the enemies of vegetation, especially the eggs, larvæ and moths of tree pests. As a singer the wood thrush ranks high, in so far as richness of voice goes, but its song has few notes and no variety of expression. Nothing is sweeter, however, than the half-plaintive, half-joyful ecstacy of its early-morning trills heard in the dark woods of the Wabash bottoms.

The cat-bird (*galeoscoptes carolinensis*), next to the brown thrush, is the best singer in Indiana, but he is migratory and very rarely spends the winter with us. Wherever there is an orchard, a garden of berries, a hedge or a thicket of wild bramble, the cat-bird will be found nesting and singing throughout the spring, and I may add that the wise man, who grows raspberries, blackberries and gooseberries, will take just as great care of his cat-bird as of his vines, for many cat-birds insure healthy and strong bearing vines.

The robin (*merula migratoria*) is probably a permanent resident of a very small part of our State, if it is a permanent resident at all. During very mild winters it lingers in middle Indiana till January. The Ohio River appears to be about the dividing line between its permanent and its merely summer home. The robin is a cheerful, earnest singer, but its voice is somewhat metallic, and lacks what, as I have said, musicians call *timbre argentin*, that sweetness of tone so perfectly developed in the voice of the wood-thrush and the mocking-bird. It is a warm friend of agriculture, destroying innumerable insects and it has no bad habits.

The blue-bird (*sialia sialis*) is hardly a genuine songster, and he rarely spends the winter with us; but he comes with the first hint of fair spring weather and begins his cheerful vocalization on our fence stakes, shining meantime like a blue flower or a bit of warm sky. If the farmer will observe, he will note that the blue-bird is always on hand when corn land is being broken in spring, ready to eat all the "grubs" and insect eggs and larvæ which the plow share turns up. Almost every stump, bowlder and fence post will have its blue-bird watching each new furrow and pouncing down into it as soon as the plow has gone by. The amount of good this bird does would appear incredible if it were put into the form of a detailed account.

The cardinal grossbeak or Virginia red-bird (*cardinalis cardinalis*) is irregularly resident throughout the year in the southern half of Indiana. It is a vigorous singer and unfortunately is becoming rare, on account of having been killed for use in trimming ladies' bonnets. I feel sure that the women of Indiana would prefer doing without scarlet feathers to having this splendid bird exterminated.

The orioles are summer residents in our State. There are two species, the Baltimore oriole (*Icterus galbula*) and the orchard oriole (*Icterus spurius*). These birds are the especial friends of grape vines and pear orchards, as they never tire of searching them over and over for insects. It may be added that they eat grapes, too, but they earn the right to all they want.

I need not speak of the glad notes with which in early May these birds fill our woods. A spring without the orioles would scarcely be spring.

The song-sparrow (*Melospiza fasciata*) is resident in Indiana most of the time.

All the species of this genus are especially friendly and helpful to the farmer. The voice of the song-sparrow is charmingly sweet, clear and liquid. It begins early in spring and makes the morning merry with its notes from the earliest "peep of day" till long after sunrise.

All sparrows are great insect killers as well as mighty devourers of weed seeds.

The limit of this paper forbids any specific mention of the other sparrows, the warblers, the vireos and all the rest. Indiana farmers must learn to protect their birds in every possible way. Everybody knows that we have a hundred insects harmful to our fruit trees, vines, vegetables and cereals to where we had one thirty or forty years a ago. Why? Largely because the birds are not one-tenth as numerous as they were then. I make the assertion boldly that you can not have a healthy apple orchard without plenty of birds. The same may be said of cherry orchards and the whole catalogue of fruit trees, vines and vegetables, as well as of the staple cereals. Twenty years ago a failure of the apple crop was very rare—indeed, apples were plenty every year. Now we have a failure almost every year. Why? Because trees without plenty of birds are never healthy. You can not have fruit without birds, unless you do the work of the birds yourselves. You must either suffer from failures in crops of fruits and cereals, or you must fight the insects, or you must let the birds fight them for you. Well, if the birds work for you, you must pay them their wages in cherries, berries, apples and pears and never grumble.

I made a good, old farmer call me a "crank," the other day, when I told him the reason his clover fields have failed to bear as much seed as they formerly did.

"You don't allow the bumble-bees to be killed on your farm, do you?" I inquired.

"Yes, sir; I do," he cried. "I make my boys burn up every plagued nest of them."

"So I supposed," I replied. "And that is why your clover seed fails you. Bumble-bees make clover seed."

"You're a crank! You're a crank!" he exclaimed, and looked at me as if he thought me a fit subject for the lunatic asylum. And yet it is a fact that a strong nest of bumble-bees, in a big clover field, is worth twenty dollars to the owner; for these insects are the chief agents in fertilizing the blooms, thereby insuring a heavy yield of seed. In Australia there are no bumble-bees of our kind, and the consequence is, they can not raise clover that will produce seed there until they import bumble-bees. So, if you allow the *oscines* or song-birds of our country to become distinct or weak, you must expect to see insects of all kinds muitiply with continually increasing ravages, until you have invented some artificial way of destroying them. But you mustn't call me a "crank" for telling you this! You all, or most of you, recollect that twenty or thirty years ago, when the woods of Indiana were alive with birds, all the farmers used to have plenty of pears, plums, cherries, apples and delicious cider, no matter if the birds did swarm in the orchards, and eat, and chatter, and fight over the best and ripest fruit. After a while the shotgun began its work. The farmer wanted all the fruit himself, so he watched his trees and shot the birds. The result is what you see; insect-eaten trees, wormy fruit, curculio, caterpillars, bark lice, worms, bugs, flies, everything except in public affairs that has been practiced in personal affairs, one which has governed every successful farmer and business man in the country who has held his own or gained in whatever engaged.

The civil service law, from which so much was expected and over which there has been so much controversy, does not apply to the really responsible parties; it strikes too low down in the ranks. It would be much more effective for good if it applied to the higher officials. The law as it now stands affects only those performing routine duties, and has no effect upon those who form the policy regarding imposition of taxes, collection and expenditure of revenue.

The formation of a proper sentiment regarding suitable qualifications for office will not be difficult; it will require time, perhaps a long time. In this respect only will it be a work of magnitude, but great as it will be, it can be done. As to means, personal effort first, then simple organization of societies to discuss the matter is all that will be required to start the sentiment in the right direction. No technical schools such as are required in preparing for the professions will be needed, but in the common schools should be placed elementary works on taxation and other phases of social science. The conditions, whatever they may be, that admit of England supporting a population of 200 to the square mile, France 175, Germany 202 and Belgium 500, in comparative comfort, of course not equaling that of our own people, while we have only an average of 14 to the square mile for the whole country, and yet idleness, crime and distress are on the increase. What are the reasons that in 1850 only one in 3,442, in 1860 one in 1,647, of our population was in our penitentiaries, while in 1870 one in 860 were confined.

There are causes for these changes that should be ascertained, and proper effort made to restore the good and to eliminate the bad elements that have made these undesirable changes in society. As certainly something has been done, or something left undone, that has produced these changes in our social features. Is it not time to begin to look for causes?

The natural resource, and opportunities of the country have not lessened; schools, churches, hospitals and asylums for the unfortunate have been enormously multiplied in number; millions of money have been expended on these; four millions of our enslaved fellow-beings have been liberated; unnumbered acts of public and private benevolence have been performed since 1850, and yet the increase of crime has been enormous. To what can all the existing evils be so reasonably charged as to ill-advised legislation, and public maladministration regardless of name or nature of parties. As to this the ablest writer in the world can not cite any true difference. You are spending money with a view of teaching your children how to make it, but not giving them much if any information as to how to save its absorption by tax eaters, and those who subsist upon the fruits of class legislation.

Many of your teachers and professors have a fair understanding of these questions, but they have no fair opportunity of communicating the same to those under their charge. School-book, and other rings, do not want any literature in the schools that will tend to any lessening of their opportunities. This they would consider an infringement of vested rights. The strength of those who exist on their fellow-citizens through maladministration consists largely in suppressing light and knowledge; an increase of these only will make their calling an impossibility.

There can be found more well read books on political economy in the hands of farmers and business men who never have asked for office, nor will they ever accept it, than there are in the hands of equal numbers of political aspirants.

These spend more time[1] in studying as to how a doubtful majority may be secured than they do in learning what would be the best service they could render a constituency. The people have been so often deceived and disappointed under the cry and promise of reform, that they naturally, and for good cause, are suspicious of everything attempted under the name, which has become a by-word of unpleasant savor. Good reasons could be given for this, the main one being that too many so-called reformers have been cast out from all parties, being considered unworthy of trust in any party. These if not absolutely worthless are too often malcontents, who can not be relied upon. They all belong to a profession in which party lines are a small impediment against change, when personal preferment or gain may be accomplished thereby. Taking into account all the obstacles and difficulties in the way of, or against, true reform, it would seem that the true, sure plan is to commence at the foundation, in the common schools and colleges where the young are being instructed, so that they may enter business and professional life prepared to act intelligently on these questions.

Financially, politically and socially you have as great an opportunity before you as had the pioneers materially. It is greater in one respect. Subtle and pernicious influences and effects may be harder to eradicate and overcome than were undeveloped physical conditions, more from inadvertance—being intensely engaged in useful employments—than from lack of ability or disposition. To a large extent political matters have passed from your control into the hands of professionals, who have become, to say the least, careless in administering public trusts.

You have supported more officials and their idle dependents than is warranted, considering the service they perform. Can you consistently leave such a legacy, which must deteriorate rather than improve, to your children and those who will follow them. I ask your consideration of this question with only that candor with which you have considered your best business interests. This is all it needs. Inasmuch as under our representative form of government those who legislate are drawn from the ranks at random, the great safeguard will be to educate all. Then will permanency to our institutions be doubly assured.

There are a few who begin to think our form of government is a failure. There is no fault in form or intent, nor any lack of ability to maintain it. This heresy comes as the result of bad administration. It can not fail to always subserve original purposes if intelligence commensurate with the wants of the case is kept up to a proper standard. The terms on which liberty is enjoyed are inexorable; they can not be evaded.

Exertion and vigilance in this direction, rather than cowardly indulgence in any belief as to organic weakness in form, is what is wanted. There can be no long enjoyment of privilege except as compensation for well-performed duties. They are and ever must be inseparable.

The large distinctive class alluded to before is the agriculturists. They compare with other classes engaged in gainful callings, by the census of 1880, as follows:

	Number.	*Per Cent.*
Agriculture	7,670,493	44.1
Professional and personal service	4,074,238	23.4
Trade and transportation	1,810,256	10.4
Manufactures, mechanical and mining	3,837,112	22.1
All classes	17,392,099	100.0

The farmers so largely outnumber any other class that they are justified in calling for any reform or change of method that will benefit combined classes. Anything benefiting the farmers must be shared with all others. Taking into account, privilege, fitness and numbers, and the large base interest they represent; no other class can claim such pre-eminence.

The move, as before stated, involves no large expenditure, and will afford mental employment that will yield pleasure and profit, as it will be a great defense against the threatening, ever present danger of class legislation, which has always existed, and which always will; it being a natural and inevitable inherent of representative forms of government, and can not be entirely eliminated. The unscrupulous will always take every opportunity to push their schemes, but it can be kept at a minimum, and no single interest in the country is better situated, if they exert themselves, to guard against such legislation than the agriculturists.

The President, in his late message, pays a handsome tribute to the agriculturist; a few significant paragraphs are as follows:

OUR FARMERS.

"The agricultural interest of the country demands recognition and liberal encouragement. It sustains with certainty and unfailing strength our nation's prosperity by the products of its steady toil; and bears its full burden of taxation without complaint.

"Our agriculturists have but slight personal representation in the councils of the nation, and are generally content with the humbler duties of citizenship, and are willing to trust to the bounty of nature for a reward of their labor.

"But the magnitude and value of this industry is appreciated, when the statement is made that of our total annual exports, more than three-foruths are the products of agriculture; and of our total population, nearly one-half are exclusively engaged in that occupation."

This extract affords much food for reflection; the cynic will no doubt sneeringly say these are merely conventional phrases which all chief magistrates make use of. But granting for argument sake that this may be true, it does not detract from their significance.

We are not willing to consider this part of the message empty phrases; the President is an honorable man, with as much candor in his composition as any of his predecessors; he was once the candidate of a majority, he is now President for all. This expression is only fairly characteristic of his earnest manner before and since he has occupied the present exalted position, and may be profitably considered. All classes will do well to give agriculture just recognition; well may they comply with the President's advice. This may be hastened by the agriculturists themselves, who, if ever properly recognized, must invite recognition by doing their full share of thinking, and acting on the great questions involved in self-government and its perpetuation.

If ever properly represented it will only be through knowledge and activity on their own part; no other class is likely to push their interests, or to thrust any political honor upon them. In the maddening strife of growing competition, and thirst for power and precedence, to say nothing of ulterior purposes in the way of class legislation in which so many have been adepts from causes that need not be here referred to, none can or will serve you as well as you can serve yourselves. The American farmer who has shown greater results than any of his predecessors within the limits of recorded history, by the wealth he has furnished from his intelligent exertion, and which is visible in our splendid cities and towns, by the changes he has made in the face of nature, by the food he has furnished the millions in his own and other lands, by these and many other considerations has he distinguished himself, and yet he has seemingly or apparently forgotten his higher, better opportunities and privileges.

Should he not awake to the importance of preserving and increasing these before the ignorant and unprincipled throttle and destroy him, taking to a common ruin all depending classes.

Has he not been too contented with the humbler duties of citizenship? Is it not time that he resorted to broad, comprehensive measures, looking above and beyond these? Judged by all the past, who that can be named is more competent if only he comes fully up to all opportunities.

FISH CULTURE.

BY JOHN MILLER, BLUFF CREEK, IND.

Fish culture, to some extent, has been practiced in this country for almost thirty years. The first few years of this time was spent in efforts to cultivate such varieties of game and food fish as trout, salmon and others. These varieties of fish being carnivorous in their habits, the raising of the young fry by natural reproduction was not a success. Therefore, taking spawn and hatching it by artificial methods was introduced into this country about 1864. This discovery was made in 1763 by Jacobi, a Lieutenant in the small principality of Leppe-Deltmolt, and he received a pension from the English government in appreciation of his discovery. This method of propagating and raising the young fry of these carnivorous varieties was very successful. Many millions of valuable game and food fish have been successfully planted in different streams.

There has been planted in such streams as the Connecticut, Hudson and Delaware rivers, many thousands of young salmon' by individual societies, State and United States Fish Commissions. These streams when first discovered by the white people were salmon streams; therefore it was plausible that as they did grow at one time in these streams, that they could be restocked and made to produce in abundance salmon again. There is no proof that their efforts in this behalf were successful or that even 200 adult salmon have been taken from these waters during the past twelve years. I refer especially to these streams, because of the earnest and expensive efforts made to replenish them. The harvest gathered has not met the expection of those who spent valuable time and money in sowing the seed in the way of young salmon, and the people were disappointed. As before stated, the varieties of fishes that have been selected and propagated to restock the streams, have been the best of native game and food fishes that are to' be found in this country. These varieties being carnivorous, to avoid their destroying their spawn, and their own progeny, which was the case in natural reproduction, artificial impregnation and propagation were resorted to, to raise the young fish, which necessitated much labor and expense. During the time fish culture has been practiced in this country, if the time employed and the actual cash outlay were computed, the amount would run up into the millions. Viewing this business, as it has been practiced up to a few years ago, from a business standpoint, the returns or profits certainly present a very discouraging appearance. As before stated, by artificial fecundation, the propagation of the young fry was a success, as at least 90 per cent. of the spawn is saved in this way, whereas by natural methods only about 10 per cent. is secured. Through the efforts of Fish Commissioners, untold millions of valuable varieties of game and food fishes have been successfully distributed and planted in almost every State in the Union. The masses of the people expected that the results of the efforts would be followed by the gathering of a large harvest of fish as food.

Is it not fair, honorable and manly to frankly admit that this costly labor of years has yielded no satisfactory pecuniary returns? The only degree of financial success which has been attained of which I have knowledge has been in the sale of the young fry. The desired result was a failure, for there is no proof that when these young fish became adults that they were marketed, thereby increasing the food supply of this country. What are the causes that have made our rivers barren of our best varieties of food fish? The greater cause has been attributed to illegal methods of catching and destroying fish.. In this connection I want to refer to causes which I have derived from personal observation. The Wabash and White rivers and their tributaries did at one time contain valuable food fish. I remember, about thirty-five years ago, of seeing salmon taken from some of these waters that weighed from eight to twelve pounds; bass were numerous as suckers are at the present time. I do not refer to the catching of salmon in these waters to infer that such rivers were recognized as salmon streams, but merely to show that the condition of the water was such at that time as to support such fish. The water then was clear of impurities, their tributaries were shaded by the forest, and contained an abundance of natural food suited to the peculiar and various wants of the finny tribe. A great change has taken place; the forests that protected the streams from the burning rays of the sun have disappeared, the little brook that carried its supply of food has also disappeared; cities and towns have been built on the river banks, and I observe a great revolution in the condition of the waters of these rivers. The water that was so pure and clear has become muddy and full of the impurities and gases from the cities and towns, therefore the best of the food fishes are gone. In further investigating the condition of these streams, I find that our rivers are but natural sewers for receiving and carrying off the impurities of farms, towns and cities. The real fact is, that such varieties of food fish will not remain in such waters. An examination of the food of such varieties as still inhabit our streams leads me to assert that they are impregnated with these impurities to such an extent as not to be good for food. To conclude, then, I am of the opinion that our barren streams result more from the causes above narrated than from illegal methods of catching, or to the ravages of an occasional rapacious fisherman.

POND CULTURE.

Pond or inland fish culture has not until a few years past been considered a success, owing to former efforts to grow the same varieties of fish in this branch of the business as were employed in stocking the rivers. Wishing to understand the habits of many of our more common native varieties, I procured a supply of almost every species that I thought worthy of cultivation. I worked with them for several years, trying, if possible, to discover a variety that could be successfully propagated and grown as a food fish. In their habits of natural reproduction I found no two varieties the same in caring for their spawn. Some deposited their eggs on stones, brush and aquatic plants, while others, like the sunfish, excavated their nests on gravelly beds and kept constant guard over them. Some covered their ova up and left it in the care of Mother Nature; others again, including some species of catfish, took a parental care over their progeny, leading and protecting them as a hen does her young brood. I discovered in some of these species excellent habits, in harmony with the rearing of animals, still one or the other of the following objections was to be found: Slow growth, destruction of the spawn, destruction of the minnows. I spent time, labor and money in my efforts to discover a variety that could be profitably grown, producing flesh at a cost in the reach of all; the result was disappointment and pecuniary loss. In 1878, wishing to confer with some other one in my native State on the subject, I wrote to the editor of the *Indiana Farmer*, asking whether there was any one in Indiana cultivating fish, or whether we had a Fish Commissioner. On receiving an answer to the contrary, I resorted to the press at Cincinnati; from this source I received the address of a gentleman who informed me that carp had been transferred to this country, also accompanying the letter was a blank to be filled out for carp. I filled it out and placed it in the hands of a Congressman to be presented to the United States Fish Commission. In the winter of '79 and '80 I received an order good for twenty minnows, which I secured after much annoyance and some expense. These fish spawned in 1883; from that year and the two years following, I secured 150,000 of the young fry by natural reproduction, the most of which has been safely transferred to different States for the purpose of stocking lakes and ponds. After becoming acquainted with the habits of this foreigner, I considered that it had no equal for pond culture. I consider the acquisition of this fish to this branch of fish culture a great achievement, and that the transferring of the food carp to this country was the greatest work that the U. S. Fish Commission ever accomplished. This fish has been sucessfully planted in almost ever State and Territory in this country. Its cultivation as a food fish is fast becoming as prominent an industry as the raising of poultry. Farmers, as a class, are slow to take hold of new ideas or in adapting new theories; wheat and corn culture they know all about, but they require much labor and outlay in their production. In the case of carp culture I am gratified to say that they have given it a trial, and have grafted this new industry in with their other agricultural pursuits. It is estimated that at the present time there are 30,000 persons engaged to some extent in carp culture; I think many of these will fail at first for lack of system. Every intelligent farmer and business man is aware that no industry will be successful where haphazard methods are employed. This also applies to carp culture. A large per cent. of those commencing this business are deceiving themselves. Having procured a few dozen minnows they plant them in any crude pond they chance to have, or procure by the least labor or expense; if they do not die, they are astonished at the great growth that is made in a year or two, increasing their interest in the business. They impatiently wait for their fish to breed; when they spawn they quickly observe how prolific they are. They think the business is a success, and look forward to no distant day when they will gather a perpetual harvest from what is, perhaps, little less than a mud-hole. They fancy that thousands of fish can subsist here, because a few obtained large growth: This is not the fact.

I have great faith in this foreign article on account of its frugality, and its adaptability to lakes and ponds; also, on account of its habits of natural production, which is to the practical fish culturist its best recommendation.

It is extremely gratifying to note the increasing interest in this direction; people seem to be waking up to a sense of the value of water as a food producing agent. Indeed, the fish raising fever has been so great in the past few years, that the people are as eager to procure fish to rear as fancy breeds of stock. As to the future of this business, I look forward with great faith to see the efforts that are being made by individuals to stock ponds and lakes of this State with carp, crowned with success. Nor do I see reason why the streams that have become barren of food to support the native fish, can not be replenished by this foreign fish, at least to some extent. Yet I do not look to this source for any great increase of food fishes. I am expecting the great supply to come from the private ponds or fisheries. There is no State that has greater facilities for fish culture than our own; and with her numerous springs, natural ponds and lakes, marsh land and rivulets, this business can be conducted on a majority of her farms.

DISCUSSION.

Mr. Miller. The quality of carp is not equal to cold water fishes or salmon.

Mr. Kingsbury. Does not this depend on the character of the pond?

Mr. Miller. Yes, the water they grow in has much to do with it; also, the quality of the food is an important factor. I have found this to be the case in examining the fish in White River below the city. They are impregnated with gases from the sewers and rendered unfit for use.

Mr. Dungan. Are your ponds fed with spring water?

Mr. Miller. Yes, sir.

Mr. Dungan. Does not the temperature have something to do with successful carp culture?

Mr. Miller. Yes, sir.

Mr. Dungan. If the water is too cold the result would not be so satisfactory?

Mr. Miller. Yes, sir; it hinders the growth of the fish.

Mr. Dungan. I have a spring in which I think the water is too cold.

Mr. Miller. It is necessary to have the water the right temperature. In making your pond from the spring, make it shallow, so the sun will warm it when the carp is growing and disposed to spawn.

Mr. Dungan. Your fisheries are large, and few persons would want to build so extensively. Could I have the water warm enough if shallow with one pond?

Mr. Miller. Let the water in at one point; the sun will warm it there if shallow. The great mistake is deep water. It is not necessary to have deep water only for the fish to retire to for rest. Water from six inches to twelve inches is necessary.

Mr. Davidson. How do strange fish get into these ponds?

Mr. Miller. A long experience in this culture has given me ideas of my own. One way I account for the transferring of strange fish is, that most all spawn laid has a glutinous substance on it which adheres to everything it comes in contact with. A crane will light down, a muskrat or turtle will come in contact with it, to which it will adhere, and is carried by them until they are transferred to the right place.

AGRICULTURE AS A LEARNED PROFESSION.

BY CHARLES R. DRYER, M. D., OF FORT WAYNE.

The subject under consideration involves three questions: First, Ought agriculture to be a learned profession? Second, Is it a learned profession? Third, If not, how can it be made a learned profession?

THE OBJECT AND NEEDS OF THE FARMER.

The object of the farmer, as stated by Prof. Johnston, is to raise from a given extent of land, the largest quantity of the most valuable produce at the least cost, in the shortest period of time, and with the least permanent injury to the soil. There can be no occupation then, which, for the attainment of the highest success, requires more learning or more brains than farming. The farmer can make use of nearly the whole range of scientific knowledge: physics, chemistry, geology, botany, physiology, throw light upon almost every step which he takes, or ought to take, in order to accomplish his object. The farmer above all other men, except perhaps the physician, needs extraordinary powers of observation, the ability to take into account a multitude of complex and ever varying conditions, and the acumen to see how those conditions may be modified so as to bring about the desired result. These powers can be acquired in a high degree only by a thorough scientific training. Suppose that a farmer wishes to raise upon a certain field a crop of potatoes; a multitude of questions at once arise. What is the nature of the soil? Ought it to be underdrained? How has it been cropped? Shall a growth of clover upon it be plowed under? Shall this be done in the fall? Shall barnyard manure be drawn and spread upon it during the winter, or in the spring? Shall it be planted in April, May or June? Shall the seed be whole potatoes or two eyes in a hill? Shall it be covered deeply or lightly? How long and how often shall the plants be cultivated? How shall the "bugs" be disposed of? Is a top dressing of gypsum, or wood-ashes, or Stassfurth salt, or sulphate of ammonia indicated? There are as many questions for the farmer to answer in his potato field as there are for a physician at the bedside of a new patient, and almost as difficult ones.

The ordinary farmer will not trouble himself with half of these questions; he will plow, plant and cultivate just as he is in the habit of doing, or as his father did before him. If the soil has not been exhausted and the season prove favorable he will raise a good crop. In this country he will perhaps get a good crop nine times out of ten. The scientifically educated farmer who considers all these questions and answers them intelligently will, nine times out of ten, get a much larger crop than his unscientific neighbor; and what may be of greater importance than that, will do so without exhausting the soil.

AGRICULTURAL WEALTH AND EXTRAVAGANCE OF THE AMERICAN PEOPLE.

A century ago the American people came into the possession of a larger fortune than ever before fell to the lot of any community. Arable land of unparalled extent and fertility was committed to them to use and to hold in trust for the use of their descendants forever. They are spending this fortune, principal and interest, with reckless prodigality. The soil of the oldest States is already exhausted. In the once famous Genesee valley, where forty bushels of wheat to the acre was the ordinary yield, it now requires a good deal of brains to raise twenty bushels. We even hear occasionally of a piece of prairie which, after thirty years of cropping without manure, rufuses any longer to produce corn. The Romans exhausted the soil of Italy and were obliged to import their grain. England imports wheat from Australia, Russia and America. It is not only possible, but under the present system it is inevitable, that the immense stores of fertility, which through untold ages were prepared for us, will become exhausted, and our posterity of the twenty-fifth century will have to import breadstuffs from—where? The only salvation from such a fate is more scientific farming.

MENTAL ACTIVITY OF THE AMERICAN PEOPLE.

The American people, as a whole, possess greater mental activity than the English, French, German, or any other modern race. They have a laudable ambition to earn their living by their wits rather than by their hands. There is that stirring within them which makes any kind of drudgery revolting. This is the secret of overcrowded professions; the real reason why, during the last five years, 20,000 students have been graduated from our medical schools; why 11,000 are now receiving instruction therein, and why nearly 5,000 doctors a year are added to a profession already overflowing. It is the complaint everywhere that the bright young men leave the farm and enter professional or commercial pursuits. This is a serious and widespread evil, and will continue to be so unless something is done to remedy it. The craving for mental activity is an appetite as irresistible as that for strong drink. It should not be repressed, but encouraged and directed into the best channels. If the boy finds no room for mental activity on the farm he will seek room elsewhere; *and the boy is right.* The only way to keep him at home is to make farming interesting to him, and the only way to make it interesting is to make it a more intellectual pursuit. If the boy could be shown from childhood how to mix brains with the soil—brains are always the best fertilizer—how to make his head help his hands; if his eyes could be opened to see the great world of truth and beauty, of adaptation and law, which lies all around him, the world of nature, which must ever surpass in extent and value all art and literature' every grass-blade would be a revelation, and he would find more delight in hoeing corn alone in the back lot than in the gossip of the street, the store, or the office.

IMPORTANCE OF EDUCATION FOR FARMERS.

It might be shown that scientific farming is, in the long run, more profitable; that if farmers were better educated for their calling the standard of general intelligence would be raised; that the agricultural population would live better and longer, and commercial, social and political results of vast importance and benefit to the nation would follow. But the considerations already presented, viz.: *the rapid exhaustion from our farms of their fertility and their best men*, are sufficient to render the education of farmers one of the most important questions of the day.

FEASIBILITY OF SCIENTIFIC EDUCATION FOR FARMERS.

"Agricultural chemistry," says Dr. Gilbert, "is the chemistry of the atmosphere, the chemistry of the soil, the chemistry of vegetation, and the chemistry of animal life and growth." Is it feasible, some may ask, for any considerable number of farmers to master so vast and complex a science? In demanding general technical training for farmers are we not asking an impossibility? The experience of the medical profession may throw some light upon this problem. Between scientific agriculture and scientific medicine there is a striking analogy; their fields are almost co-extensive. While the physician is most concerned with man, the farmer has most to do with air, soil and plant. Both are confronted by the same kind of questions; and the same qualities of mind and the same kind of training which enable a physician to treat disease successfully, would also enable a farmer to raise crops and cattle successfully. Of the 100,000 persons now practicing medicine in the United States, the vast majority, probably nine-tenths, have received a fair professional education. That education consists usually of a course of study extending through three years, and including two terms of attendance at a medical school of twenty weeks each. No preliminary attainments, beyond the ability to read and write, are required. Every year thousands of young men, with only a common school education, enter upon this course of medical study, maintain a good rank in the schools, graduate with honor, and go out to practice medicine with success. The agricultural sciences are no more difficult than the medical sciences; they are to a great extent identical, and the same natural ability and application which win success in one would win success in the other. Yet if the same mental activity, the same laudable ambition for intellectual labor, which leads 5,000 young men to enter the medical schools every year would lead a corresponding number to enter the agricultural schools, the agricultural millennium would be nigh at hand. The farmer would then go into his fields as the physician goes to the bedside of his patient, prepared to understand symptoms and appearances he has never before seen, and to adapt his practice to circumstances which have never before fallen under his observation.

THE AGRICULTURAL SCHOOLS.

There are about forty schools in this country in which agricultural science is taught. The whole number of students pursuing therein an agricultural course of study does not exceed 3,000; and the 1,000 who may leave such schools each year constitute a very small leaven with which to leaven the whole lump of an agricultural population of eight millions. There are four million owners and managers of farms who ought to receive professional instruction, and the existing agricultural colleges are doing comparatively little toward the accomplishment of this gigantic task. At Cornell University there were last year eighteen students in agriculture, at Purdue University twelve, at the University of Wisconsin nine, at the University of Illinois twenty-one, and at the University of Minnesota, one student. At most of the agricultural schools which are separate from other departments the attendance is very moderate. There is a certain class of schools in which the attendance is better, some of the reasons for which will be noticed subsequently. President Reid, of the University of California, in his last report to the Governor of that State, says: "Thus far the history of our agricultural college has but added to the testimony, already ample, that the agricultural population of the country does not feel the necessity, not even the desirability, of farming in accordance with scientific principles." He expresses the opinion that the chief office of agricultural colleges is to act as experiment stations, where investigations too large and expensive for private means may be conducted. In those newspapers whose columns are open for the expression of opinion from the farmers themselves, nothing is more frequent than ridicule or severe criticism of the agricultural colleges. Their courses of study are stigmatized as "ornamental," "useless," or "impractical." If the farmers would take the trouble to get better information in regard to what the colleges really do teach, these complaints would be less frequent. To show that most of this criticism is not well founded, the requirements for admission, course of study, and expense of attendance at a few colleges are here given.

Purdue University, Lafayette, Ind. For admission, arithmetic, algebra, English, physiology, geography, history of the United States. Course of study, four years: Agriculture, drawing, English, geometry, trigonometry, botany, surveying, physics, entomology, zoology, history, chemistry, German, physiology, geology, psychology, political economy, veterinary science. Expenses about $140 a year.

Ohio State University, Columbus. For admission algebra, geometry, trigonometry, physics, botany, English, Latin or German, history. Course of study, the sciences of the course at Purdue University with mathematics, but without language, history or philosophy. Expenses, $130 a year.

University of Illinois, Urbana. For admission algebra, geometry, English, physiology, physics, botany. Course of study substantially the same subjects as at Purdue University. Expenses, $140 a year.

Michigan Agricultural College, Lansing. For admission, proficiency in the common school studies. Course of study, the same subjects as at Purdue University except German, and with the addition of logic, moral philosophy and astronomy. Expenses, about $80 a year.

Surely there is nothing in these courses of study which can be called ornamental or useless, and very little that is impractical. The universities of Ohio, Illinois, Wisconsin and Vermont, and perhaps other schools, offer a short course in agriculture of two years or less, which any person of fair judgment and intelligence may enter, and pursue only those branches which pertain strictly to agricultural science. It is charged against the agricultural colleges that very few of their graduates engage in farming. The Michigan Agricultural College reports 312 living graduates, of whom 128 are engaged in agricultural pursuits, and 12 are professors of agriculture or related sciences. Thus 45 per cent. of its alumni are doing the work for which their education was designed to prepare them. The Massachusetts Agricultural College reports 219 graduates, of whom 72 are practicing agriculture and 15 are teaching it; that is, 40 per cent. The State Agricultural College of Kansas, during the twenty-two years of its existence, has received 2,585 students, most of whom came from farmers' homes and, after from three months to three years of study, went back to such homes. If this is not all that the friends of agriculture could wish, it does not show nearly so bad a state of things as is usually assumed to exist. Such requirements for admission as those at the universities of Ohio and Illinois are absolutely prohibitory to the vast majority of farmers; yet these institutions can not make themselves more accessible and still maintain the high standard of scholarship and scientific acquirement which belongs to a university. There ought to be one school in each State for the education of teachers of agriculture and others who desire the highest possible attainments in that direction.

There ought to be another class of agricultural schools, more numerous, more accessible, and of a lower grade, for the scientific education of the mass of farmers. Some of the existing schools belong to one class, some to the other, and some are trying to perform the office of both. If their students are not numerous, their graduates few and their farmer alumni fewer, it is more the fault of the farmers themselves than of the colleges. There is exactly the number of medical schools in this country and exactly the kind of schools which the people demand, and if the people demand any kind of agricultural schools they will get what they ask for.

AGRICULTURE IN THE COMMON SCHOOLS.

In January, 1869, Hon. Isaac Kinley made an eloquent and forcible argument before the Indiana State Board of Agriculture in favor of the introduction of a graded series of text-books upon agriculture into the common schools of the State. Governor Begole, of Michigan, in his last message to the Legislature, December, 1884, recommended that some competent person be employed to prepare a text-book upon agriculture which should be used in the common schools of that State. These gentlemen see clearly the need of better education for farmers, but it is to be feared that they do not duly appreciate the nature and difficulties of the undertaking. There is but one reason why children above the age of six years should not be taught something about the soil, the weather, and common plants and animals. That reason is the want of competent teachers. If any principle of education is established it is that no text-book would answer in such a case. The child must learn science from nature, with the help of a living teacher, or else the process is not quickening, fruitful study, but mere cramming of dead facts. At the door of every school-house in the land, outside the large cities, lies material for teaching geology, botany, zoölogy, and nearly all the sciences pertaining to agriculture. These subjects, when properly taught, are especially calculated to attract, interest and instruct the child; but not one common school teacher in a thousand has received any scientific training whatever, and the introduction of these sciences in any form into the common school course would result only in disappointment to the friends of sound education and disaster to the cause.

HOME AGRICULTURAL EDUCATION.

In 1882, Dr. R. T. Brown read before the same Board an enthusiastic essay upon Home Agricultural Education, in which he argued that a teacher is only a convenience, and that with a primary work setting forth the fundamental principles of agricultural chemistry and physiology, young people at home might learn the rudiments of agricultural science. It is true that they could, and if every young farmer had the same spirit, taste for study, and perseverance which characterize the essayist himself, the problem would be solved and the annual paper or papers on agricultural education might be omitted from this and similar volumns. Books are not wanting and many of them are as good as can be made: Johnson's "How Crops Grow," and "How Crops Feed," and Johnston's "Catechism," and "Elements of Agricultural Chemistry and Geology," are to be had through any book-seller at small cost, but they are seldom to be found upon the farmer's table. The vast majority of youth require the stimulus, the guidance, the inoculation of a love for scientific knowledge, which comes only from a living teacher.

THE AGRICULTURAL PAPERS

are doing much for the home education of farmers, but their contents are necessarily heterogeneous in character and variable in quality. Agriculture is too vast and complex a science to be learned by desultory and unsystematic reading, and it is safe to say that no scientific farmer was ever made such by the reading of newspapers. There is now an organization at work and a movement in progress which promise to do what can be done for the home education of farmers.

THE CHAUTAUQUA TOWN AND COUNTRY CLUB

is devoted to the practical study of plants and animals, horticulture and agriculture. Its course of instruction includes the observation and study of the weather, the growth and habits of plants and animals, practical work in the garden, the house or upon the farm, and the reading of certain books. The first volumn of the series, "Talks About the Weather," by Charles Barnard, is now published. Although designed for adults, the clearness and simplicity of style is such that it can be understood by any intelligent child. It begins where such instruction ought to begin, at the bottom, and contrives to put its reader in the way of acquiring considerable real scientific knowledge. This book is to be followed by others, upon the soil, useful plants, and useful animals, and all have the advantage of being prepared at Houghton Farm, and under the immediate supervision of its manager, Major Henry E. Alvord. It is not impossible that this club may succeed in accomplishing more for general agricultural education than all the colleges have yet done.

THE PRESENT STATE OF AGRICULTURAL EDUCATION

seems to be this: All is being done that can be done by home education for the general diffusion of technical knowledge among farmers. The colleges are, as a rule, doing little because they are not within the scope of the average farmer's ambition, and because they are beyond his mental and financial reach. In the only schools which all attend it is impracticable for want of competent teachers to give scientific instruction. The only ground which offers hope of large success has never been tried, apparently has never been thought of. In the middle ground, stand the secondary schools, which include the old fashioned academies and seminaries, and the more modern high schools and normal schools. These furnish what may be called an academic, in distinction from a common school or a collegiate education. Their courses of study are universally arranged for the benefit of prospective business or professional men. If the natural sciences are taught, they are never taught as having any bearing upon agriculture. Why should not these schools offer some special attractions and advantages for the youth who intend to be farmers, and teach something which will show to their students that the farm is not necessarily the dull place so many find it? The majority of farmers' sons get only a common school education; one here and there under exceptional circumstances acquires a collegiate education; a large and increasing number spend one or more terms at an academy, high school, or normal school. There is no reason why they should not find there courses of study especially designed to meet their wants.

ACADEMIC AGRICULTURAL EDUCATION.

In every agricultural county there ought to be one or more schools where farmers' sons and daughters might receive instruction in those branches of science which to them are most important and ought to be most interesting. These schools should not aim to be or to be called colleges; the requirements for admission to them should be the least possible, probably not more than a fair knowledge of the three R's. The course of study should include only those essential subjects which every farmer must know something about in order to follow his pursuit intelligently. These subjects fall into three parallel lines—language, mathematics, science.

COURSE OF STUDY FOR FARMERS.

The farmer should be able to speak and write the English language correctly, and to express himself clearly upon paper and in conversation; he should know good literature and enjoy reading it; he should be familiar with the outlines of the history of his own country and people; he should understand the constitution and government of his country and State. The first line then would include *English language and literature, English and United States history, civil government.*

The farmer needs the ability to use the fundamental principles of arithmetic, including fractions, compound numbers, percentage and proportion, and should know something of commercial law and custom; he should know how to keep such accounts as are involved in his business; he should be able to lay out his garden and grounds, his orchards and fields, to construct roads, to plan buildings, to measure land, timber, masonry, bins, mows, cisterns, etc. Therefore, the second line of study includes *arithmetic, book-keeping, geometry (without algebra or much demonstration of theorems), mechanics and drawing.*

The course of study in the agricultural sciences should be the distinguishing feature of the school, and should be arranged with special care. It would necessarily include five subjects: (1) the earth, (2) the air, (3) physics and chemistry, (4) the plant, (5) the animal. These might be placed in the following order:

I. *Physiography.* The relief and drainage of the county, its rocks and soils, and the agents which have shaped its surface. Each student should copy from published maps a skeleton, showing only the township and section lines, highways and streams; the map should then be verified, corrected and added to by actual inspection in the field. By assigning different portions to different students the class might be able in a few weeks to compile a complete physical map of the county; at the same time collections should be made of the different kinds of soil and rocks. The State and the United States should be studied in the same way, but less minutely. The specimens of soil and rock collected should then be carefully studied, and their origin, formation, composition and properties determined.

II. *Meteorology.* Effects of heat upon liquids and gases, evaporation, condensation, freezing, absorption, winds, rainfall, changes of the weather, climate of the United States.

III. *Botany.* Structure and action of plants, studied first from beans and other seeds sown in boxes, the work being extended in spring to common flowering plants. Collection of specimens should be continued at home during the summer. In the following autumn at school, the more difficult orders, such as grasses, composites and forest trees, with collection of fruit, leaves and wood.

IV. *Physics.* The general properties and structure of matter, and the elements of agricultural chemistry with laboratory work.

V. *Zoology.* Thorough study and dissection of a cat and a fowl, with examination on special points of a frog, snake or turtle; insects, with instructions for collection and preservation. The work for the summer at home should be the collection of insects, birds, and other animals, to be studied more thoroughly the following autumn at school. The greater part of the third year should be taken up with the anatomy and physiology of man and the domestic amimals, with hygiene, feeding, breeding, common diseases, and the general principles of medical and surgical treatment. The course might close with a summary of the principles of farm management.

For the amount and value of mental discipline which can be derived from it, such a course of study compares favorably with any that can be devised. It is here arranged to extend through three years of about forty weeks each; but if a student should attend only the first year he would get the benefit of the most essential part, and if he should attend only the six winter months of each year he would acquire technical education of great value. The course contemplates that much of the practical work shall be done at home.

HOME WORK

should be definitely assigned to each student according to his taste and opportunity. To conduct some inexpensive experiment in plant culture, to make a collection of some order of plants or animals, to construct a complete physical and agricultural map of a certain district, to procure a certain set of specimens of rocks or of native woods—such tasks could easily be accomplished in the intervals of farm work, and would keep a boy or girl alive, interested and happy all summer. The good effects of such study would extend beyond the boys and girls to their parents and neighbors.

SCHOOLS FOR THE MASSES.

There are several agricultural colleges in which the requirements for admission and the subjects taught do not differ widely from those above described; and it is a fact worthy of note that *those which require only the common school branches for admission are the only ones which have more than one hundred students.* To this class belong the agricultural colleges of the following States: Virginia, with 132 students, Texas 142, Michigan 173, Georgia 224, Iowa 238, Missouri 349, Mississippi 141, Kansas 401. These figures offer considerable encouragement to the friends of agricultural education, and at the same time show conclusively what kind of schools are most popular and successful in attracting the mass of farmers. Their work does not consist so much in maintaining a high standard of scholarship and scientific acquirement as in diffusing more widely the knowledge of scientific principles. High scholarship must ever belong only to the few; the elements of science may be understood by all. One school in each State is enough for the few, one in each county would not be too many for the masses.

THE STORRS AGRICULTURAL SCHOOL.

There is one school in the United States in which the experiment of academic agricultural education is being tried, and with gratifying success. The Storrs Agricultural School, at Mansfield, Conn., admits boys above the age of fifteen years, whose parents are citizens of that State, to a two years' course of study "in such branches of scientific knowledge as shall tend to increase their proficiency in the business of agriculture." It has been in operation four years, and has thirty-three students. The school possesses a farm of one hundred and seventy acres, with commodious buildings, necessary apparatus, cabinet and library, the gifts of Augustus and Charles Storrs. The Legislature appropriates $5,000 a year for the support of the school, and a tuition fee of $25 a year is charged. This may be taken as a type of the kind of school which the condition of our agricultural population demands; but it does not follow that a school, in order to be of great service, necessarily requires so much capital invested in a permanent plant. An academic agricultural school might fulfill the purpose of its existence without possessing a farm at all. The practical work can be done in most cases by the student upon the farm at home. The true aim of an agricultural school is not to teach the student how to plow, or to sow, or to feed, but to show him the reason and laws of these processes, that he may perform them intelligently and work for their mprovement.

THE EXPENSE OF SUCH A SCHOOL

need be but little more than that of the ordinary public school. In any school where the English and mathematics are already taught, an agricultural course might be opened with an outlay of $100 for apparatus, and $500 would equip the department comfortably. A few microscopes, a chemical laboratory for work and not for show, and a scientific library of fifty volumes, would be necessary at the start; the rest would grow. The students themselves should contribute largely of their collections to the school museum, and after some years it should represent a complete and exhaustive survey of the natural history of the county, and should acquire by exchanges specimens from a wider territory. Unless the number of students pursuing the course exceed sixty, one teacher could give all the technical instruction. It is not improbable that if some competent person should open such a school in a favorable location, and should properly advertise it, he would find, after a year or two, that it would prove attractive and profitable. But such a great undertaking as the general technical education of the agricultural masses can hardly be accomplished without

STATE AID.

Let the Legislature of Indiana establish, in connection with ten or more already existing schools, favorably located in different portions of the State, an academic agricultural course of study; let an appropriation of $2,000 annually be made for the support of each school; let these courses be open to any citizen of the State, and let tuition be free. After a few years the farmers would learn to appreciate the value of such education, and would see to it that such schools were sufficiently numerous to accommodate the whole population. Let the State begin the good work of bringing scientific instruction home to the door of every farmer, and agricultural education will soon take care of itself. Such schools would react upward upon the colleges, and fill their halls with students desirous of preparing themselves for teachers, or of pursuing farther agricultural studies. They would react downward upon the common schools, and in time furnish a corps of teachers which would render possible the introduction there of proper scientific instruction. They would react outward upon the whole community, and farming would become a more intellectual occupation, and consequently more attractive and profitable, a larger number of farmers' sons would stay upon the farm, and the American people would cease to squander their patrimony, and begin to husband a portion of the natural fertility of their soil for the support of future generations.

In the meantime let the farmers read the best agricultural papers; let them join the Chautauqua Town and Country Club.* Let them send their children to schools where some of the agricultural sciences are taught; let them furnish at home a few good books upon agriculture and natural history. Let the brighest boy attend a year or two, if no more, at an agricultural college, and let all work to make agricultural schools more numerous and more accessible. Thus, if ever, will be fulfilled the prophecy of a time when agriculture shall be "not only a useful, but a learned and liberal profession, and its cultivators not the bone and sinew merely, but the ornaments of society."

---

*For application blanks for membership, address Miss Kate F. Kimball, Plainfield, N.J.

REPORTS

OF

County and District Agricultural Societies,

EMBRACING THE

CONDITION OF AGRICULTURE,

FOR THE YEAR 1885,

FOLLOWED BY A CONDENSED FINANCIAL EXHIBIT, NUMBER OF ENTRIES AND PREMIUMS PAID, IN TABULAR FORM, OF ALL THE AGRICULTURAL SOCIETIES REPORTED, WITH A LIST OF THE NAMES AND THE POSTOFFICES OF PRINCIPAL OFFICERS OF EACH.

The following reports are such as are required by statute law, and a certificate from the Secretary of the Board of Agriculture, showing that such report has been made, entitles such Agricultural Society to the show license fund that may have accumulated in such county treasury. See R. S., secs. 2631, 5269 and 5270.

The general improvement in these reports from year to year is very gratifying, and in accord with the general prosperity and improved condition of the country. No failure in fairs reported, but a higher tone in morals as a standard of excellence A thorough description of each county is given in our last annual report; hence, we here avoid any such repetition.

SECRETARY.

ALLEN COUNTY.

The Northern Indiana Fair Association closed the fourth year of its successful career with 1885.

The society looks with pride on its past achievements, has no regrets and begins the new year on a solid financial basis, with the confidence of exhibitors and the good will of the people of Northern Indiana, whom it promises to make greater efforts to please in the future.

The annual exhibition of this Association continues to encourage in the county the breeding of pure blooded horses, cattle, etc., as well as to popularize and illustrate the science of agriculture. The gravel road and ditch laws, while extravagant and costly, are asserting their existence, and a system of drainage and fine turnpikes permeates every part of this county, making the sale of all products accessible to a ready and profitable market at Fort Wayne.

The wheat harvested well, the crop is of excellent quality, and of more than average quantity. Corn, while promising an abundant yield, did not ear out, the grain being soft and mushy. Oats, rye, clover, potatoes, etc., are up to all expectations, while fruits were not so successful.

Much wealth is being invested in agriculture, and the prospects are that this county will lead all others in the graceful and profitable pursuit of tilling the soil and rearing a higher grade of horses, cattle, hogs and sheep. The Fair Association makes friendly competition an object, and exhibitions in its art, produce, machinery, horses, cattle, sheep, and hog departments indicate a growing and determined effort to excel yeal after year.

W. W. ROCKHILL,
Secretary.

BARTHOLOMEW COUNTY AGRICULTURAL AND INDUSTRIAL ASSOCIATION.

In presenting the third annual report of the Bartholomew County Agricultural and Industrial Association, we are aware of the fact that it is not a true index to the general standing and prosperity of the county.

Bartholomew County, centrally located as it is, with its splendid and varied soil, its natural advantages for agriculture and stock raising, ought to support one of the best agricultural fairs in the State; but on account of a bad feeling existing between the two societies, it seems to be impossible for either to hold a successful fair. We do not own the fair grounds, and having to pay an enormous rent, with other incidental expenses resulting therefrom, we have not yet been able to pay our premiums in full, thereby injuring our patronage. We can not hope to be entirely successful until our people are united.

The agricultural interests of the county have generally prospered during the past year, and although there has been a loud cry of hard times, it is more imaginary than real.

The wheat crop was badly injured by the severe winter of 1884–5, cutting the crop short of our general average, probably 50 or 60 per cent.; but the farmers held over from the preceding year more than ever before, the light crop enabling them to sustain better prices than they would otherwise have done. Besides, probably 30 per cent of the acreage was plowed up and planted in corn, which is our best crop, and for which we have the best market, yielding the best harvest we have ever had. More bushels of corn were raised in the county this year than ever before, for which the farmers have received a very fair price, the bulk of the corn going to the American Starch Works and Perline Mills at Columbus, the Franklin, Edinburg and Madison starch works getting considerable.

The oat crop was never better, and was harvested in splendid condition. The farmers of this county do not raise this crop for market.

Cloverseed was a fair crop, and sold at better prices than usual.

The crop of fruit was not large, owing to the trees never having fully recovered from the severe freezing in the year 1881–2. Though many young trees have since been planted, they are not yet bearing.

The stock-raising interest has kept pace with the general improvement of the county. The scrub of ten or fifteen years ago has given place to better blood.

In horses the heavy drafts are making some show, but the well-bred general purpose horse is always given the preference.

In cattle the shorthorns and Jerseys have almost entire possession.

In hogs the Poland China and Chester Whites have complete possession, and in sheep the Southdown and Cotswold are almost exclusively raised.

The educational interests of the county compare favorably with any, and surpass many counties of the State. The graded schools of Columbus, Hope, Hartsville, Taylorsville and Newbern are well up with the times, and the pupil who receives a diploma from either of these is very well prepared to battle with the realities of life, so far as a common-school education is concerned. Besides, the university at Hartsville, under the auspices of the United Brethern Church, is one of the best of colleges. The Normal and Pedagogical Institute, at Hope, is one of the best and largest normal schools in the State. The Conservatory of Music, at Columbus, is one of the best in the country. A good and substantial brick schoolhouse can be found in every school district in the county, and our township trustees are vigilant in securing the best of teachers.

E. A. JONES, *Secretary.*

BARTHOLOMEW COUNTY AGRICULTURAL SOCIETY.

The Bartholomew County Agricultural Society held no fair in 1885, having leased its grounds for the season to the Bartholomew County Agricultural and Industrial Association, with the understanding that in doing so our society relinquish no rights that it enjoys, either from the State or State Board of Agriculture. It is well understood that the two societies now existing in our county can not separately hold a successful meeting in the same year, and it, therefore, seems better for us to lease our grounds temporarily to our competitors than to undertake a rivalry which can but result disastrously to both societies.

RICH. THOMAS,
Secretary.

BLACKFORD COUNTY.

The Blackford County Agricultural, Horticultural and Mechanical Association held their eighth annual fair at Hartford City, August 25 to 28, inclusive. The first two days were rainy and disagreeable, but the last two were all that could be asked or desired.

The show in live stock was not large, but was particularly fine, while the floral hall was full to overflowing.

The track is one of the best half-mile tracks in the State, and, being in fine condition, attracted the attention of quite a number of lovers of sport, the races being the best ever witnessed on the track at this place. JAMES R. WILLIAMS,

Secretary.

BOONE COUNTY.

The Boone County Agricultural Society held its twenty-sixth annual fair on the grounds of the association, near the city of Lebanon, August 17 to 21, inclusive. The grounds have been enlarged by the purchase of fourteen acres and all enclosed with a substantial picket fence, and with this addition were taxed to their utmost to accommodate the crowds of people in attendance during the last two days.

The number of entries exceeded those of 1884 by nearly four hundred, although our fair was held too early to give our farmers a fair chance to show their productions; still it is the experience of this society that an early fair is more successful, as the first county society, organized a number of years ago, stranded through the medium of late fairs.

In the horse department the number of entries was larger than at any former exhibition, but the number of hogs, cattle and sheep was less than should have been in a growing and prosperous county like ours. This seeming lack of interest is attributable in a large measure, I think, to the fact that the "elm peeler" hog and scrub cattle and sheep have, until within a few years past, held sway in this locality. Now that a score or more of live men have determined that "blood shall tell" at our exhibitions, these "relics of a past age" are to be seen no more upon our farms or in our show-rings.

The mechanical department was creditable, considering the accommodations the managers had to offer exhibitors. It is the intention of the officers to erect a suitable power hall for the coming fair, when our friends will doubtless show what they can do in the way of a display of the various kinds of machinery.

The poultry department had some fine specimens on exhibition; here, too, more suitable accommodations are needed and will ere long be provided.

The ladies contributed largely (as they always do) in making the fair a success. This department will also be provided with more commodious quarters.

Last, but by no means least, the Boone County Bee-Keepers made a display which was decidedly the grand attraction of the fair, and it was pronounced by competent judges as better than any display ever made at our State Fair.

The financial condition of the society is good, and should our stockholders, at their approaching annual election, exercise wisdom in the selection of good men as officers for another year, doubtless success will remain with our association.

JOHN W. KISE,
Secretary.

CASS COUNTY.

The thirteenth annual fair of the Cass County Agricultural Association was held at their fair grounds, at Logansport, September 22 to 26, inclusive. The weather during the entire time was all that could be desired to make it pleasant for exhibitors and patrons, not a drop of rain falling during the five days, and with beautiful moonlight nights made it exceedingly pleasant for all concerned. The result was that the attendance was increased over last year, and the receipts were larger, enabling the Association to pay all premiums in full, which pleased exhibitors and others, and relieved the Association from the discredit derived from the failure to pay premiums in full last year.

Under the act of the last Legislature prohibiting all kind of games of chance on fair grounds, some of our directors were fearful that our receipts would be so far reduced that we would be unable to pay in full, and at first were somewhat discouraged about the matter, but made up their minds to be governed by the law in its strictest construction, and allow no games of chance of any kind whatsoever upon the grounds; and while it is a fact that the receipts from ground rents were reduced several hundred dollars, the Association was able to pay in full, and everybody who attended the fair felt better, and it was almost the unanimous opinion of the Association, exhibitors and visitors that the law and its strict adherence thereto was a good thing, and very few, if any, of the patrons or others interested in the Cass County Fair would have the law repealed if they could. Heretofore many persons have refrained from attending our fair for the reason that we have allowed games of a certain kind upon the ground.

The exhibition, taking all the departments into consideration, was fully up to the average, and in some of the departments above.

In the horse department the show was in every way creditable, and demonstrated the fact that Cass county has made some rapid strides in bringing the horse, that noble animal, by careful breeding to compare favorably with other counties, which was not the case some years ago. There are now in this county some as good speed, roadster and draft horses as are to be found in any of our neighboring counties.

In the cattle department the show fell short of former years in quantity but not in quality.

In the sheep and swine departments the show was good, all the different breeds were represented, and the quality was number one.

In the poultry department the show was very fine, at least Mr. E. J. Ward, of Chicago, the judge, pronounced it so; and under his awardings all exhibitors seemed to be well satisfied.

The display in the mechanical department was large.

In the ladies' and fine art departments the quality of the exhibits was never exceeded, though perhaps not so large as on some former occasions.

The grain and vegetable display was number one—fully up to any exhibition ever held in the county, showing conclusively that the soil of Cass county can produce everything that is desirable, and that of the very best quality.

The display of fruit, from the fact that the apple crop was very near a failure last year, was not as large as usual.

In the culinary department the show was fine, showing that the ladies of Cass county know how to bake and preserve good things.

The condition of agriculture in Cass county is taking no backward step, but is steadily on the advance, and by the use of tile drainage lands that were comparatively worthless for agricultural purposes years ago now produce the largest and best quality of crops.

There is in Cass county a diversity of soil, but little of it that is not particularly adapted to the growth of some kind of grain or vegetables, and with the numerous railroads traversing the county in all directions, and with several good gravel roads, the products of the soil are easily marketed, and but little of the time of the producer is required to put his products upon the market for all they are worth, leaving more time for other work.

The crops throughout the county last year were good, being above the average.

D. W. Tomlinson,
Secretary.

CLARK COUNTY.

The twenty-seventh annual fair of the Clark County Agricultural Society was held at Charlestown, September 1 to 3, inclusive. The exhibition was good throughout, and showed that our farmers and stock men are keeping well up with the times in farm products, stock, etc. The condition of agriculture in the county shows that much improvement has been made in the last twenty-five years in the mode of cultivating the soil, and continuing its fertility. If the present system of rotation of crops had been practiced in the first settlement of the county, we would now have much more fertile land. But "necessity knows no law," so those who cleared off the heavy forest that was native here, were obliged to seed their land in corn, for the raising of hogs, which was a necessity, they bringing more ready money than any thing else. Then, too, much land was cultivated in corn that ought to have been kept in grass, for it was hilly and washed off rapidly. But now efforts are being made to restore the lost fertility by putting the hill land in grass, and rotating and fertilizing the more level portions. This can be practiced now, for there is a demand for beef, mutton and dairy products, and the productiveness of the soil is being steadily increased. The soil along the Ohio River is based upon limestone, and that of the northern part on cement rock, slate and iron ore, so that every quality of soil, from the very best to the very poorest, may be found in the county.

The price of land varies from $5 to $150 per acre. Some of the native forest is still standing, mostly, however, on and along the range of knobs that lie in the northwest portion of the county. Farm houses and other farm buildings are of good quality, and in some parts they are equal to any in the State.

The kind of fence mostly in use is the common rail, but as they are fast decaying with no material of the same kind to replace them, wire fences are being substituted which seem to give perfect satisfaction. Before the introduction of barbed wire, there was considerable stone fence built in the vicinity of the Ohio River, but it was very costly, and has not proven as substantial as was thought it would, it being liable to be thrown down by the effects of heaving up from freezing, and the continued moving of the stones by expansion and contraction caused by change of temperature. A few of the best constructed are giving fair satisfaction.

This county is well divided in its agricultural and manufactured products. Five cement mills are giving employment to several hundred men, and turn out a vast quantity of cement each year, which is being shipped to all parts of the country. In addition we have car works, ship yards, glass works, foundries and flouring mills. Cooperage is quite an industry in the county. Upon the whole the county is well representated in the various occupations, and as thrifty as any agricultural district in Southern Indiana.

But farmers are generally slow to recognize the fact that the lands they cultivate do not wholly belong to them. They think the more they can get off their land, regardless of the effect upon its fertility, the more profitable it is. This may be true as far as they are personally concerned, but the land in all this great country should be so used as not to diminish its productiveness, for it does not belong to its present owners in the sense that they have a right to wear it out for a little gain. Our farms belong as much to future generations as to us, and should be transmitted to them in the very best possible condition of fertility. If this is not done, we are robbing those who come after us, as we may have been robbed by those who occupied the land before us. It is a very common thing now for one generation to give constant attention and effort to restore the soil to the condition it was when occupied by the generation preceding, people who used it in such a way as to nearly wear it out. This wearing out of land is an injustice, both to our descendants and to the commonwealth. This country is a very new one yet, and we should so use it as to prevent its getting old in the sense of being worn out, for its future greatness and wealth depend mainly on the productiveness of its soil. It is quite common for farmers to say, "the crops are not so good as they used to be, and it requires more work to produce them, so I believe I will sell out and go West where the land is new and where good crops are raised with less labor." Why! this land in Indiana is new yet! Think of it! but little of it has been in cultivation for one hundred years, and most of it for less than fifty, and yet we are speaking of it as being exhausted, worn out, and are turning our faces westward for more land to wear out.

This ought not to be; our farms should be as fertile after being in use for five hundred years as they were when they were first brought under cultivation. Western land will all be taken up sometime, and the soil will be more worn out than that of Indiana, unless great care be taken to prevent it.

Indiana must, in the near future, support twice the population it now does, and our farming should be of that kind that will enable us to produce better crops each succeeding year, until the very greatest perfection of the art of cultivating the soil is reached, and the land brought up to the highest degree of fertility. This object should be kept in view by the present owners, and transmitted to those who come after them. Restoring exhausted land is a slow process, but must not be neglected. The fact that it is slow, should of itself cause us to look to it at once, and get the process under way.

We ought to consider that we are only "stewards," and must be able to use our land so as to transmit it to our posterity, not only as the "talent" given us, as did the slothful servant, but like faithful stewards, who not only used but improved. Then we can say to those who come after us, "here is the land we cultivated for a lifetime; and behold it is more productive now than when it came to us."

Let every farmer in Indiana, and especially in Clark county, carefully consider these facts and act upon them. Some have been working to increase the fertility of their farms for the past twenty-five years, and have succeeded admirably, and are now enjoying the fruits of their effort and care in that direction. And much more may be expected if their course is pursued for twenty-five or fifty years to come. Then we say to those who now own land in this county, don't too hastily give up your land to take a chance with those in the great west. And we say to others, come to Clark county. Land is cheap yet; health is good, schools and churches are numerous. We have three railroads through the county, and the beautiful Ohio River along nearly forty miles of our southeast border. The cities of the Falls, with a population of more than one hundred thousand, lie at our doors, which furnish a ready market for all our surplus products. Nowhere are producers and consumers brought more closely together.

DENNIS F. WILLEY, *Secretary.*

CLINTON COUNTY.

The fourteenth annual fair of the Clinton County Agricultural Association was held on the grounds, near the city of Frankfort, commencing August 24 and closing August 29, the last day clearly demonstrating the fact that people get tired even of a good thing. The fair was a gratifying success in every respect, the entries exceeding in number any previous exhibition. The weather, being a factor in our outdoor amusements, was very unpropitious the two first days, interfering very materially with the necessary preparation for the exhibit, the continued rain on

Saturday, Monday and Tuesday making it almost impossible to do anything but try to keep in out of the mud and wet, and grumble at that irresponsible something known as Providence. But when the elements relented, by dint of extra and untiring exertion, things were soon put in shape, and the exhibition proceeded without further delay.

Our fair is run on strictly temperance principles; no gambling device of any kind is allowed on the grounds to gull the unsuspecting.

The show of fine horses was unprecedented in the history of the association, the general-purpose horse leading largely in point of numbers. The display of cattle was very good, Holsteins being shown on our ground for the first time, showing our farmers to be wide awake to the importance of bringing in improved stock. There was present the usual quota of sheep, swine and poultry. In all other departments the show was unusually good, and the attendance all that could be desired thoughout the fair.

There is, however, in all our fairs a lack of competition among actual farmers, the professional exhibitor nearly always carrying away the honors in every department.

There is little to chronicle in the way of agricultural progress during the last year. The business of farming seems to suffer the general depression incident to all other branches of business. There has been about the usual amount of improvements in the way of building, draining, etc.

Our crops were not very satisfactory, and the prices realized for the same are not calculated to make farmers as a class feel very jubilant. The corn crop was damaged very materially by what farmers here call "the dry rot," the damage in some cases being as much as 25 per cent. We would like for some one to give us a rational cause for the disease. Potatoes were an abundant crop, with no complaint of blight. The acrerge of winter wheat sown is pretty nearly up to the average of former years, and is looking well at this time.

The live-stock interests of this county are probably receiving more attention than any other industry at this time, several herds of Holsteins having been introduced during the past year, while our shorthorns and Jerseys are deservedly considered the peers of any in the State.

Owing to the sweeping ravages of cholera, hogs are rather in the background at this time. In many places the loss was almost complete. This, coupled with the low price of pork, leaves little encouragement for embarking anew in that industry.

Our roads are in a wretched condition, owing to the slipshod manner in which they are repaired. The subject should receive the early attention of the law-makers when they again meet. This and the question of stock "fenced in or fenced out" are the two subjects most interesting farmers in this community.

M. H. BELKNAP, *Secretary.*

DAVIESS COUNTY.

The second annual exhibition of the Daviess County Agricultural, Mineral, Mechanical and Industrial Association was held on the fair grounds at Washington, commencing October 5, and terminating October 10, eclipsing all previous years in points of excellence. Some of the most noteworthy, and which deserve special mention, were the exhibition of draft and general-purpose horses and hogs, there being 140 entries in the first-mentioned class, and 50 entries of hogs. It may be justly said that no county in the State could produce finer Póland China hogs than were on exhibition at our last fair.

The display of fine arts and textile fabrics was not so large as the preceding year, but the character and quality of the work was much better.

Our grounds comprise forty acres. The distance from the court house and Main Street being only three squares; all under a good substantial fence, a splendid half-mile track being one of the special features of the grounds, with beautiful shade and excellent water. Our improvements consist of 100 horse, and seventy-five cattle stalls, and forty sheep and hog pens; also horticultural hall, 30x60; floral hall, 20x60; machinery hall, 20x130, and a very fine and commodious amphitheater, with a seating capacity of 600 people. We are out of debt, and think the above a fair showing for two years' work, although I may add it is justly owing to the untiring efforts of some of our thrifty farmers, who have devoted a very considerable amount of their time gratis, for its success, we having no salaried officers.

Daviess County has heretofore not enjoyed the privileges afforded some of her sister counties in establishing a successful county fair, owing to a lack of railroad facilities, we having had only an east and west outlet over the O. & M., but now we have about completed the Evansville & Indianapolis Railroad, which operates through a portion of the finest grain-producing land in the State. Our corn crop of last year has never been equalled in the history of the county.

Extensive improvements are being carried on by our farmers in ditching and tiling lands heretofore claimed as worthless, but which now convince them by a steady cultivation to be more profitable to continue such improvements, and raise two ears of corn in the place of one. In fertility and diversity of soil, our county will compare very favorably with any portion of the State; but a great portion of our land being a clay subsoil we have no facilities for making roads, which is quite a serious drawback. The new railroad opening up as it does some of the finest stone in the State, enables us to avail ourselves of that golden opportunity. The material we have lacked heretofore in improving our roads is more than compensated by the excellent qualities of our bituminous and cannel coals, the former being used very extensively for gas-making purposes, the latter as an adjunct thereto for enriching purposes, and large shipments are made daily to the principal cities, including St. Louis and Chicago. In a few years Daviess County will be the largest coal producing territory in the State.

JOSEPH C. LORD, *Ass't. Secretary.*

DELAWARE COUNTY.

The Delaware County Agricultural Society held their thirty-ninth annual fair on their grounds, one-half mile northwest of Muncie, August 11 to 16, inclusive.

The grounds had been put in good condition during the spring and summer, repairs and improvements were made to the buildings, and an elegant amphitheater erected by the society at a cost of over $800. This added to our former indebtedness made it necessary for all the officers and members to work hard for financial success, which was done, and the indebtedness is now all cleared but $250.

The weather was very favorable and the attendance large. The exhibits, both in numbers and excellence, exceeded anything we ever had, and we are convinced that early meetings are to our advantage.

The first fairs bring into competition, on the time track, horses that have never met; they try the speed and bottom of their competitors, and know what they may expect at other fairs where they are to meet. The live stock of all kinds from different herds and pens are brought into closer competition and a greater interest taken in the pedigrees and breeds. New inventions and late manufactured articles are brought together for the first time. The agriculturist and horticulturist bring their early-matured and fresh specimens to the fair. In fact we have all that is brought to such exhibitions one month later except pumpkins, and we are willing to deny ourselves the "frost upon the punkin" for the many other advantages.

Very great improvement and advancement has been shown in this county in the quality of stock during the past year; also in horticulture. A Stock Breeders' Association has been formed which has enrolled among its members the leading farmers and stock-raisers of the county. They meet frequently and have monthly stock sales, and it is the intention to make Muncie the Lexington of Indiana, so far as good stock is concerned. We have the soil, the capital, the natural advantages, and we trust the sense to accomplish this very desirable result, and if the interest continues unabated a successful result is certain.

The Horticultural Society is more confined to the actual farmers and horticulturists, and their monthly meetings are full of interest and have already resulted in introducing into our midst the choicest fruits and vegetables, such as are sought after and called for from the leading and distant cities. Our manufacturing interests are varied and extensive, and being situated so conveniently for railroad facilities, they have good advantages for shipping and that at low rates. This interest is growing and prospering.

As an agricultural county we are not surpassed by any in the State, and while we have heard the plaintive cry of hard times and financial depression, all of our farmers appear to have the money, if they owe you anything and want to pay it before interest is added. The people are prosperous, the fair was a success, premiums were paid in full, no grumbling, and we are expecting to do a little better next year. Respectfully, JOHN M. GRAHAM,
President.

DECATUR COUNTY.

Our annual fair was held at our beautiful fair grounds, commencing on the 26th of August, and continuing four days. We had a larger attendance than last year, and an increased interest. The receipts were sufficient to pay all the expenses of the fair and also pay in full our large and liberal premiums, with something to spare.

The crops in Decatur County were good in 1885, with the exception of wheat. The farms are constantly being improved, mainly by putting in more tile ditches. The old stumps have disappeared, and better fences have taken the place of the old rail fence. We have a great many miles of gravel road in the county, and with a railroad running almost east and west, and another north and south, nearly every township has a railroad station or two, making a convenient market. It is to be regretted, however, that all the railroad facilities of the county are under the control of one company; there is no competition, so that rates for freight are too high, and at some points oppressive. We hope to have relief at no distant day by the construction of some competing lines through the county.

WILL CUMBACK, *President.*

ELKHART COUNTY.

Thirty-four years ago, when this society was organized, the plan was adopted of admitting a whole family during the fairs by one ticket. The price fixed then for this ticket was one dollar. The ticket was much abused; families grew to immense size, sometimes including not only the visitors with the family of the ticket-holder but often some of the good neighbors, and occasionally, if the holder and family did not wish to go, the use of the ticket was proffered to the neighbor's family. Years of hedging and qualifying the family ticket did not entirely prevent imposition. The managing members, who had good reason to know of the difficulty of preventing impositions under this kind of ticket, tried each year to have a change, and abolish this kind of admission ticket. This year better counsel favoring a single admission ticket prevailed, and a twenty-five cent admission was adopted; that ticket was taken up at the gate. Children under twelve years, and all teams and vehicles, as well as all entries except speed, were admitted free of charge. The determination was reached, not unanimously, but over the protest of a respectable minority, these, although disclaiming any intention of injuring the good work of the society, were expressing fears that the enforcement of the new rule would keep many away who had heretofore favored the fair with their presence as well as with their good words. It was an experiment, and we had hoped for favorable weather to give it a fair test. Unfortunately the long spell of good weather gave way a few days before the commencement of our fair, and on the first and second days there was rain, and the receipts for tickets, as compared with first and second days of former fairs, fell off fearfully, say at least one-half. On the third day, although the rain ceased, the weather did not clear up until noon, yet at an early hour in the morning the people began to appear in front of the ticket window and to pour through the gates, and so continued to come until late in the afternoon. This was very cheering to the management, who for two days had been battling and hoping until despair had settled down on the faces of all the friends of single admission. But this day's receipts lifted the society out of the slough of despond and made it plain that all premiums and liabilities would be fully paid. The fourth was a day of good weather, and the receipts from it were quite as good and probably better than ever before on a corresponding day. The financial outcome was, in the face of bad weather, as good as could have been expected. The receipts were sufficient to meet and discharge all liabilities, and leave a surplus of near four hundrod dollars with which to commence a new year.

The exhibits were numerous and of such variety that the fair, in regard to what was to be seen, was perhaps more interesting than any previous show of the Society.

The show of horses covered four classes—general purpose, the heavy draft, the roadster, and the standard bred, the Society offering a full line of premiums for each of these classes. The exhibit in each of these was fully up to former fairs, and attending horsemen were pleased to note the improvement in each class.

The exhibit of cattle was better than at any previous fair.

The show of sheep was large and interesting. After years of lagging in the interest of the Merinoes, they again this year made their appearance. The Shropshires, and other crosses, and mediums, together with long-wools, were shown in large numbers, and fine specimens they were.

Of hogs there was a good as well as a numerous show; some Berkshires and Yorkshires, but the well established Poland China continues to be with us here the favorite breed. The individual samples of all these breeds were very attractive and commendable.

The poultry show, both in numbers and in well-bred birds, was the best that has ever been seen at our fair, and speaks well for those in our vicinity engaged in raising poultry.

In farm products the number of entries were greatly increased, showing the products of the cereal and vegetable class to an advantage not before seen at our fairs. Enormous cabbages, pumpkins, beets, turnips, wheat, corn, oats, rye and other seeds, surprised and pleased every body.

This was not a fruit season, yet the exhibit in quantity, as well as in quality, was quite commendable and interesting.

There was an attractive exhibt in floral hall, the fragrance and beauty of which helped make it a pleasant place.

The fancy handiwork on exhibition was abundant, giving evidence of taste, neatness and beauty. The many nice things here were highly admired and commended, and was one of the leading features of the fair.

Agricultural machinery and implements, and many kinds of labor-saving inventions were on hand, the steam power enabling exhibitors to show their machinery in motion. None showed to better advantage than a nicely-rigged wind mill and pump conspicuously placed near the new gate.

Speed premiums were never more earnestly contested, and the on-looking multitude were entirely satisfied that there was no sham or collusion in both the trotting and running tests; these giving all the excitement and amusement that can be afforded by proficiency and speed of horses.

The fair as a whole, in its exhibits and its attendance, working against rainy days and lowering skies, was a real substantial success. Most of all was it gratifying to those whose counsels prevailed in the adoption of the single admission ticket. This experiment gave an earnest of the probable success of receipts under fair weather overhead, and harmonious work of all the members.

The *progress* made in the improvement in all lines of live stock, of farm implements and machinery, and in the general farm cultivation and buildings, the intelligence of the farmer, his independence and thrift, are gratifying.

During the year there has been purchased and paid for four and a half acres of ground, making thirty-two acres in all, owned, in fee simple, by the society. The fence on three sides has been rebuilt, twenty-five new stables added, besides a thorough system of repairs made. The track, a half mile circuit, is laid in a beautiful natural oak and hickory grove, giving ample arborage above and a fine sod of grass beneath. The whole is in neat condition. It is remarked by those who visit the grounds, that in beauty and convenience they stand first of all fair grounds in Northern Indiana. JOHN W. IRWIN, *Secretary*.

FULTON COUNTY.

The fifteenth annual fair of the Fulton County Agricultural Society commenced on the 23d day of September and continued four days. The weather was pleasant, which is always an important factor in the success of agricultural fairs. We had an increased attendance over former years, and our entries exceeded in number any former exhibitions held in this county.

In horses the entries exceeded those of any former year. The show was pronounced by competent judges equal to the display at our State Fair. A perceptible improvement is observed in this and adjoining counties each year at our fairs in this department.

The entries of cattle were slightly increased over former years, and consisted of the following breeds: Shorthorns, Durhams, Devons, Holsteins, and Jerseys, most of which were thoroughbreds, though a few grades were found to be near their equal.

The entries of sheep were decreased from last year and the show was not up to the standard, therefore, every farmer should inquire into this deficit and revive this profitable industry.

The entries of hogs were increased over last year and the show was equally as good, but was not what it should have been.

Agricultural Hall was filled to overflowing with products of the farm and garden and was densely packed with admiring visitors.

The entries of flowers and plants were not as large as in former years, yet the stand was well filled. The display of fruit was much better than anticipated. The mechanical department was well filled with a fair representation of the labor-saving machinery of the day. The display of wagons, buggies, manufactured leather and furniture was of the finest kind.

The drainage of swamp lands and wet lands in this county has been carried on for the past few years with great success.

On the question of good roads this county has been behind some of her sister counties, but during the last few years great advancement has been made. The old way of hauling a load of gravel and dumping it off in a mud-hole, here and there, has been abandoned, and the plan of ditching and grading and then graveling has been adopted.

Our crops during the last year were not as good as they have been in some former years, yet they averaged well. Wheat was some below the average; the corn yield was large but not of as good a quality as some years; the hay crop was good; apples not a half a crop. In smaller fruits there were scarcely any.

E. T. Reed,
Secretary.

GIBSON COUNTY.

The Gibson County Agricultural Society held its thirty-first annual fair at Princeton, September 14 to 19, inclusive. This was another big boom for the banner county. Never before was such an interest taken in a county fair. Persons from a distance were amazed, and said, why not call this a State fair?

The citizens of this county have made up their minds to lead all other county fairs, and each and all lend a helping hand. Each one tries to excel the other in making entries and displays.

Another beauty of our fair is, it's a strictly temperate and moral society, and no gambling of any kind is allowed.

The present year has been one of success, many improvements having been added to still more beautify our grounds. The one which attracted the most attention was the large fountain erected in the center of the grounds, and for the benefit of Agricultural Societies that think of adding a fountain to the attractions of their grounds, a short sketch of how it was built may be of interest. First, a well was sunk twenty-eight feet deep, and at that depth a vein of water was reached that could not be exhausted. The well was dug down five feet square to the depth of six feet; an offset was made at that depth. The pump was set down at the bottom of the square, or six feet down in the well. This was done to be sure of not requiring too great a lift of water by the pump (twenty-two feet). A frame of oak was set up eight feet square, close by the side of the well. Timbers for this frame were eight inches square, twelve feet long. On top of this was placed an iron tank seven feet in diameter, fourteen feet high, holding one hundred and seven barrels of water. This tank was made of three-sixteenths tank iron. A common thrashing engine was used for power. The lift of the pump is twenty-two feet, and the discharge thirty-two feet over the top of the tank. The tank has three discharge pipes—one to supply the eating houses, one two and one-half inch discharge pipe to fill sprinkling wagon with, and one in the center of the bottom of tank one and one-half inch. This pipe conveys the water to the fountain a distance of six hundred feet. The fountain is eight feet below the level of the ground at the well, the tank being upon a platform twelve feet above the ground, giving twenty feet fall from tank to fountain. The fountain is twenty-three feet across the top, three feet ten inches deep, dug in the shape of a bowl, walled with brick, and the bottom cemented with Portland cement. Around the fountain is an inch pipe, which serves as a railing. Into this pipe is sixteen brass jets, which throw one-fourth of an inch stream of water each. This is supplied with water by the one and one-half inch pipe from the tank, and supported by sixteen one and one-half inch pipes. In the center is a three-fourth inch pipe, with jet, basket, ball and revolving spray, which is supplied from the three-quarter inch pipe. The waste water goes off through three inch vetrified pipe, laid in cement, and supplies water for all stock, the location of the stalls being some ten feet below the fountain. There is a three-inch iron pipe standing in the middle of the tank, and when the fountain fills three feet and ten inches it then wastes through the three-inch iron pipe into the vetrified pipe and goes to the tank at the stalls.

The coming year we will make several more fine improvements, one of which will be a large double log house on the "old style," to be used as an old relic building. The present year this was another fine feature of our fair, and many articles of our forefathers' days were shown and attracted much attention.

Each year we add from twelve to fifteen hundred dollars worth of improvements to our grounds, and still have money in our treasury.

We can not close without saying a word about the ladies of our county. They always have as fine a display as you will find at any State Fair, and in our display of crayon drawings they were never excelled; also in painting. Gibson County may well feel proud of her fine art gallery, for she can not be excelled.

S. VET STRAIN,
Secretary.

GRANT COUNTY.

The thirty-third annual exhibition of the Grant County Agricultural and Stock Association was held on the grounds of the society near Marion, August 25 to 28 inclusive. Owing to the extremely early date, there was a light exhibit of agricultural and horticultural products, but the mechanical and all live stock departments were unusually well filled, necessitating the erection of additional buildings for their accommodation. Financially we did only fairly well.

The agricultural community of our county has done well this year. Wheat came through the winter looking so poorly that only the best of it was kept, the remainder being plowed up and put in corn, and as the season proved excellent for corn, there was a large average yield of both crops.

Farming is undergoing a change in methods that is quite noticeable this year; shipment of grain has fallen off, which shows that the industry of raising stock for market has more attention than formerly; the rearing of poultry and dairying are now very important branches of farm work, and is assuming immense proportions; fish culture also receives some attention.

The baling and shipping of hay has grown to quite an industry; hay, accordingly, commanding a better price than when there was a mere local demand, is rather a profitable crop, and a very large acreage is grown.

But little road building this year; the roads were generally already piked where really needed; building improvements not so extensive as for the past few years, yet greater in the country than in towns; other improvements, such as ditching, were quite as extensive as ever, perhaps more.

We believe our county has more tile mills than any other in the United States, and they are kept running to their fullest capacity.

Four flour mills adopted the roller process of making flour this year.

There is need of manufacturing establishments in our towns to put them to the front on a line with the county at large. The crossing of three railroads at this place renders excellent facilities for shipping and makes this an excellent location for factories.

The prevailing low markets prevent grain and stock from being sold, and the non-producing classes from sharing in the benefit of their value being in circulation; otherwise, times with us would be easy. CARY ZOMBRO,

Secretary.

GREENE COUNTY.

The sixteenth annual fair of the Greene County Agricultural Society was held at Linton, October 5 to 9, inclusive. The premiums were paid in full, and the exhibit was very creditable to the county and entirely satisfactory to the Society. The weather at the beginning of the fair was very cool and damp, deterring many persons from attending—diminishing the cash receipts to an amount barely sufficient to pay premiums and expenses. In point of entries every department was well represented, there being a total of 1,399 entries in the various departments. The Society paid in premiums $1,131.50. The horse department seemed to be the great center of attraction, there being 154 entries in this department alone. Two years ago the Society incurred a debt of $150 by purchasing a small tract of land lying north of the fair ground and adjoining thereto. This was greatly needed, as it has enabled the Society to lay out a beautiful half-mile time track that is not surpassed in this part of the State. Last year the Society was short $175 on premiums. This money was borrowed and the premiums paid in full, making a total indebtedness of $325, which is all that the Society owes. We now have twenty-two acres of beautiful land, worth fifty dollars per acre, and including improvements, perhaps the whole property is worth $2,500. We believe the future of our Society is already assured, as the vast resources of Greene County are being rapidly developed. With our great increase in population and wealth, with the intelligence and enterprise of our people, they most certainly will foster and protect a factor that has accomplished so much in the way of improvement of our stock and other various industries. The year 1885 has been a prosperous one for the people of this county. The corn, oat and hay crops have never been surpassed in the history of this county. The vegetable and root crops were raised in abundance and of excellent quality. A plentiful supply of fruits, with the exception of peaches, was noticeable on every hand. The continued showers of rain throughout the latter part of the season was very favorable for all kinds of stock that feed and fatten on the various grasses, as a luxuriant growth was maintained throughout the entire season. The wheat crop in many parts of the county was an entire failure, although where wheat had been sown on sandy soil or had been sown early, there was, perhaps, an average yield, and it is now generally conceded that there was a sufficient quantity raised for home consumption within the county. The present prospect for wheat (January 1, 1886,) is very flattering, as it was generally sown early, and it has now a very luxuriant appearance. The number of acres sown last fall amounts to about 75 per cent. of the usual wheat crop in this county. Good crops have had the effect to stimulate our farmers, merchants and other business men to make many valuable improvements, including the erection of many new and commodious residences. Thousands of acres of wet lands have been drained by tile and open ditches, numerous iron bridges have been constructed by the commissioners, and a $100,000 court-house completed. Thirty miles of new railroad have been built during the year 1885. Greene County now has over 100 miles of railroad, and has an inexhaustible supply of timber, building stone, iron ore and coal, with its thousands of acres of rich agricultural lands, furnishing a great field for capital and a rich reward for labor. A company has been formed within the last year that is now mining and shipping nearly 300 tons of fine bituminous coal daily. Their shaft is located one and one-half miles south of Linton, at what is now called Island City, a town of 200 or more inhabitants. This has brought a home market and city prices for many farm products within a radius of several miles of the mines. We need one thing yet to make Greene County one of the best counties in the State, that is gravel roads. We have not a single mile of gravel road in the county. This is not as it should be, and we hope the question may be agitated until our people take hold of the subject in earnest.

D. J. TERHUNE,
Secretary.

HAMILTON COUNTY.

The seventh annual exhibition of the Hamilton County Agricultural Association was held on our grounds, one-half mile west of Noblesville, August 24 to 28, inclusive. The first two days were rainy, causing some delay in making entries, but on the afternoon of the second day the clouds scattered, the sun shone out brightly, and entries were made up to near midnight. The remaining three days were fair, the attendance large, and, taken altogether, our fair was as good if not better than former exhibitions.

The departments were all well filled; especially so were the horse, cattle and hog departments. We never fail to have a splendid display of horses at our fair. Hamilton County can show as fine specimens of the heavy draft horse as can be found anywhere in the State. The Clydesdale and Norman, and their crosses, constitute a large per cent. of the horses found within our borders. We also have some "flyers" that would do credit to any fair.

Of cattle there are the Shorthorn, Jersey, and Holstein, to be found scattered promiscuously over our county. The Shorthorns seem to take the lead, with the Jerseys next in favor.

The poultry department was well represented and gave a good show both in numbers and excellence of birds shown.

The agricultural department was filled to repleteness by as fine a display as has ever been seen at our fair.

The horticultural department gave a creditable show, though not so good as at some former fairs.

The ladies' department was crowded so as to again admonish the managers to make more room for this display. Our building, although new and good so far as it goes, is not sufficiently large to accommodate the display.

The receipts of our fair, while not being quite so large as that of some former exhibitions, yet were amply sufficient to pay the premiums in full, the running expenses, and for some substantial improvements in the way of stalls, pens, etc. Our success seems to have become established. Our people have confidence in the management, and seem to recognize the fact that they will always get just what has been promised them. We allow no gambling or games of chance of any kind upon our grounds, a feature that meets with the hearty approval of our people.

Our farmers the past year have achieved a reasonable degree of success. Our soil being admirably adapted to general agriculture and stock raising, the successful farmer combines the two and is generally successful in reaping a rich harvest.

Hamilton County is pre-eminently a corn-growing county, with wheat, grass and oats coming next in order as named. Quite a large part of the county was formerly heavily timbered with bur oak, poplar and ash. This soil is a rich black loam which yields good returns, even though somewhat neglected.

White River divides our county from north to south, and this, together with the numerous smaller streams, furnish an area of rich loamy bottoms that has gone far to give Hamilton the name she has won as a corn-producing county.

There are, perhaps, few counties in Indiana that are in advance of us in the the matter of tile drainage. Hundreds of thousands of dollars have beed expended in this way, and always with rich results.

Cattle growing is keeping pace with the other industries, and is, with our splendid facilities for shipping, a most profitable business.

Of railroads, we have two passing through our county from north to south, and one from east to west, which always insure a good market for the farmers' surplus.

Gravel roads form a perfect network here, and the enterprising farmer, if perchance he is not located handy to a good road, at once recognizes his disadvantage, and sets to work to secure one.

Our people are beginning to despair of growing the larger fruits with any degree of success. There has been quite a large amount of money and labor expended in putting out trees in the last few years with comparatively but little result for good.

In the matter of improved farm machinery our farmers are wide awake, and one would most likely have to look a long way to find a farmer cutting his wheat with the old self-rake machine.

The timber land consists of nearly one-fifth of our land area, and although a large amount of the best and finest has been cut, yet we have quite an amount of valuable timber left, the owners of which are beginning to carefully preserve the same. It is no longer a question of getting rid of our timber, but rather, how to make it go as far as possible in keeping up the farm. Formerly millions of feet of fine oak, ash and poplar were made into rails to fence out the scrub cow. The scrub cow still remains, and so do rail fences to a limited extent, although, generally, as the old fence goes down it is replaced by plank, wire or hedge, and to-day to see a new rail fence is a novelty.

There is a decided majority of our people in favor of fencing stock in. The enormous expense of fencing stock out is a nuisance that should be eradicated by the enactment of a law that would put a stop to it at once. I know that some saint is always found who is ready to rise up in defense of the widows' rights, and generally he is a man who has not thought of the question sufficiently to discover the evil of it. There is no land lying out in our county, and the short, parched and dust-covered grass along the highway affords but little succulent food for the poor starving creatures, to say nothing of the hogs turning up the roadside, filling in open drains, etc. What the people of our county want is an abatement of this public nuisance, and also some law that will forever put away four-fifths of the worthless dogs that infest our land. We consider the stag or shoot law far ahead of the present dog law. In the matter of improvements, the past year has been a repetition of the years preceding it, quite a number of substantial buildings having gone up, and things look as though our people meant to stay.

G. M. YOUNG,
Secretary.

HANCOCK COUNTY.

The association was organized on December 5, 1885, at Greenfield, Ind., with a capital stock of $10,000. At a subsequent meeting of the stockholders the capital stock was increased to $12,500, in order to accommodate a number of citizens who were anxious to become members.

The "paid up" stock at this time is $9,000, and before April the whole stock will be paid up. The association purchased forty acres of real estate adjoining the city of Greenfield, paying therefor $6,000, and the Executive Committee, composed of the most energetic men of the association, are busy making the necessary improvements to hold a fair the coming season. I may add that the accommodations for exhibitors will be all that is desired.

There has been no agricultural fair held in this county since 1876, and the interest in this association throughout the county is great.

The farmers and farms of this county will compare favorably with those of our neighboring counties. The crops this year were uniformly good.

The principal products of this county are corn and wheat. The corn crop was unusually large this year.

CHARLES DOWNING,
Secretary.

HARRISON COUNTY.

The twenty-sixth annual fair of the Harrison County Agricultural Society was held from August 31 to September 4. The exhibition was good throughout. There was some falling off in the floral hall exhibit and in vegetables, but a decided improvement in stock. The show of horses was pronounced extraordinary. The weather was not favorable, and, consequently, the attendance was not so large as was expected, but the Society was able, as usual, to pay all expenses, including over $1,800 in premiums, leaving a balance in the treasury of $507. There is a determination on the part of the management to take no backward step, but to use all means within its power to raise the high rank which the fair has always held.

Corydon has within the last two years been made a railroad town, and while there may be some question as to its effect on our town, there can be none with reference to the agricultural interest of our county or our fair. The railroad has done both much good.

The last decade has witnessed much improvement in agriculture in Harrison County. The old way of cutting and burning timber for new land has about ceased. Fields known years ago as old "turned out" briar patches are now, through the intelligent use of commercial fertilizers, stable manure and clover, producing twenty bushels of wheat to the acre. In this push for improvements, however, we think the farmers make two mistakes, viz.: they buy two much fertilizer and too much machinery. They had better raise fewer bushels for the present and let their land come up gradually and by processes more natural than by the forcing process. Our observations teach us that the most successful farmers in this county are the moderate and judicious buyers of both the above-named items.

Low prices seem to be the bane of our farmers. As a rule they raise enough produce, but wheat at seventy-five cents per bushel and hogs at three dollars per hundred don't pay debts very fast. They find it a hard way to pay for farms for which they went in debt when wheat was one dollar and fifty cents or more, and hogs nine dollars or more.

The crops for 1885 were generally good, and the prospect for a wheat crop in 1886 is most flattering.

Among the things that are possible the greatest need of this county at present is good roads. I think that the present law has in some instances improved roads, but it does not meet our case entirely.

SAM. C. FUNMIR,
Secretary.

HENRY COUNTY.

Our last, the thirty-fourth annual fair, was held at New Castle from September 15 to 19, inclusive. It was a very satisfactory one. The hearty coöperation of the officers and the members of the executive committee in the work preparatory to a successful fair, was an assurance to the public of their purpose to excel if possible all other exhibitions. The arrangements for the fair and for "fair week" were more extensive and varied than on former occasions. Enlarged grounds, new and increased number of stalls and stock pens, a spacious new amphitheater, commanding a fine view of the entire grounds, were among the material improvements, but were a few only of the many modifications resulting in greater facilities for the convenience of exhibitors and the comfort of visitors. The society's past reputation for courteous treatment of exhibitors and patrons, the high regard for good morals always observed, and the almost universal satisfaction given by awarding committees in the past, together with the liberal premiums offered, were accepted by the public as a sufficient guarantee of an exhibition worthy of their patronage.

The weather was excellent, neither rain, mud nor dust to mar the comfort of any one. Notwithstanding the announcement by the society of its having abolished entirely the use of the "family badge," or general "membership ticket," the attendance was as large or larger than usual. This was evidenced by the increased receipts if not noticeable from the numbers present. The receipts usually received from "entry fees" were not realized this year, as none were charged.

The policy of abandoning the badge system—selling only single admission tickets—and of charging no entry fees, which latter again endangered the receipts, and the guaranteeing payment in full of all premiums awarded was a bold policy, but it met with such a response from the people as to leave no cause for the society to regret the new departure.

Every department was well represented. The show of stock throughout was excellent. In the speed ring there were twenty-seven entries; the purse in each instance being warmly contested, and the time made in many cases making an enviable record, much to the pleasure, and I may add, to the surprise of the spectators, as the races were free from the usual combinations of turf men, by which a division of the purse is accomplished.

The breeds and classes of stock were much the same as formerly, but the show was much larger in each department of stock, and competition correspondingly stronger. The poultry show was, perhaps, an exception. While the premiums offered in this class were liberal the exhibit did not come up to former exhibits.

The exhibition in the mechanical department far excelled any former occasion, and proved, as good displays in this department always do, an interesting feature of the fair.

From our experience, we can commend in such departments (as money premiums are not offered by the society) the practice of exhibitors making up a purse from equal payments by those entering as an entry fee, the society to furnish a good disinterested committee, and dividing the purse into two or more premiums as may be agreed upon, or according to the size of the purse, to be paid as awarded by said committee.

The departments of horticulture and agricultural products were crowded with exhibits, the excellent quality thereof fully manifesting a growing interest in this class of husbandry.

To make brief but comprehensive mention of the exhibits in the ladies' department, we must say that the display was essentially complete, in so far as the space therefor would permit. The liberal premiums offered by the society were contested in the most spirited manner by the largest number of exhibitors we have ever recorded, the quality and number of articles exceeding that of any former year, and the character of the work was such as to reflect great skill and taste upon the exhibitors.

A happy feature of our fair, and one as greatly enjoyed, perhaps, as any other, was "old settlers' and school children's day," the second day of the fair. Both were invited as the guests of the society, and the old settlers held their annual meeting and election of officers on the grounds. By invitation of the society, Hon. Benj. S. Parker delivered an address to the old settlers and others present. Many persons were in attendance from distant points. Mr. Parker's well-known ability attended him on this occasion, and he delivered a most eloquent and appropriate address.

The special premium offered for the best display of pioneer relics brought out a liberal exhibit of rare and ancient relics. These remained during the fair and proved the most attractive feature, people constantly thronging this department, even during the excitement of the racing.

A few words in reference to our county may interest some. The topography of our county was given more at length in our report of last year. Henry County comprises about 250,000 acres of land, naturally very fertile, very little of which is not susceptible to tillage. There are no large streams, but numerous small ones, affording living water. A noticeable feature of these streams, with, perhaps, a single exception, is that the land along them is tillable almost to the water's edge. Some of these streams afford excellent water power.

Over one hundred miles of railway so traverse the county that no neighborhood is more than three to five miles from a railway station and a grain market.

The roads of Henry County are rarely equalled, the more important being pikes or toll roads. There are, however, a few free gravel roads, lately constructed.

There are numerous tile factories in the county, and all are prosperous. Farmers continue to use tile, and have learned largely the value of deep drainage, and that land need not be covered with water to be benefited by tiling it.

It has not been determined what is the best farm fence, but the wire and picket —combined—fence is gaining favor.

New Castle is our county seat. It is beautifully located, has a population of 3,000 or more, three competing lines of railway, excellent public buildings and business edifices, good schools and numerous churches. In its superior railroad facilities it offers special inducements to manufacturers and shippers. It is a good distributing point.

The packing firm of Baldwin, Roberts & Co., doing business here, summarize the season's work thus: Number of hogs killed, 22,576; last year, 22,995. Average weight, 289 lbs.; last year, 283 lbs. Paid for hogs, $228,633.05; last year, $256,290.57. Paid for labor, $10,045 83; last year, $8,400. Not only the town, but our county is justly proud of this institution.

From statistics on file I append the following table, to show the per cent. of increase or decrease in the products or articles mentioned, comparing the two fiscal years, 1884-85, ending June 1 of each year:

TABLE OF STATISTICS.

	1885.	Increase Over 1884.	Decrease from 1884.	Per Cent. Gain.	Per Cent. Loss.
Acres wheat	44,636	. . .	1,440	. .	03
Acres corn	52,299	1,133	. . .	2	. .
Acres oats	5,959	1,376	. . .	23	. .
Acres timothy	11,781	3,781	. . .	47	. .
Acres clover	22,133	1,834	. . .	9	. .
Acres blue and other wild grasses	17,147	2,974	. . .	21	. .
Acres plow land not in cultivation	1,202	. . .	1,340	. .	53
Acres new land first cultivated	1,956	. . .	. . .	. .	. .
Acres timber land	49,216	. . .	. . .	. .	. .
Rods tile drainage in operation	498,171	68,252	. . .	16	. .
Bushels clover-seed	2,213	. . .	1,953	. .	47
Pounds butter produced	594,225	43,382	. . .	10	. .
Number hogs fattened	55,815	9,089	. . .	19	. .

FRANK M. MILLIKAN,
Secretary.

HOWARD COUNTY.

The Howard County Agricultural Society gave its annual exhibition on its grounds, near the city of Kokomo, September 15 to 18, inclusive. Although the seventeenth fair under the above name, it was the first under the auspices of the present management. The present association, adopting the old name, was organized January 29, 1885, consisting of forty stockholders with a capital stock paid up of $4,800. The elegant grounds, well watered, with fine grove, splendid half-mile track, new covered pens, stalls, amphitheater, floral, agricultural and mechanical halls, are owned by the society, with no incumbrance.

The exhibition was in every respect a complete success. The entries were in excess of any former year, and the quality of exhibits far superior in many departments. The poultry show was an especially interesting feature. The largest sum ever paid by any fair in the State was awarded the owners of the 600 birds on exhibition. An expert judge was secured for this department, and I feel that I can not recommend too highly the employment of single expert judges for each department.

No county in the State has better agricultural resources; although the country would be classed as level, still the undulation is such as admits of ready drainage. Our farmers, recognizing the advantages of under drainage even to rolling ground and as a protection from drouth as well as water, have invested largely in tile drainage, for which more than half a million dollars have been expended in the past ten years. The land was originally covered with a dense growth of walnut, poplar, ash, oak and other common varieties, mainly hard woods. For many years more hardwood lumber was exported from Kokomo, the county seat, than from any city in the State except Indianapolis. Over six million feet per annum of black walnut alone was shipped for a number of years, and I presume no county in the State possesses a better class of timber to-day. An abundance of limestone, well suited for paving and building purposes, is found in convenient localities all along Wildcat Creek. In some localities this stone has been found to be saturated with petroleum. Several years since a depth of 250 feet was gained in search of oil, passing through a strata of marble, and a small quantity of oil was found, but the projectors, having limited resources, further work, by force of necessity, was abandoned. Good evidence of the presence of natural gas is to be found in several localities.

Kokomo, an energetic little city of about 6,000 inhabitants, situated in the center of the county, is the county seat, with good court-house, splendid jail and school buildings. Every road leading to the city is graveled or macadamized, aggregating over 125 miles—only twenty-three miles of toll road remaining. Three railroads intersect here—T., C. & St. L., Pan Handle and Wabash, being leading lines, and their connections with competing lines, giving us shipping facilities superior to most cities of the State.

JOHN T. STRINGER,
Secretary.

HUNTINGTON COUNTY.

The Huntington County Agricultural Society for good reasons did not hold a fair in 1885. The fairs held by this association during the past five or six years were among the most successful held in any part of the State, and stood second to none in existence.

Our grounds being so far away from the city—one mile and three-quarters—was the chief reason for not holding a fair this year.

We expect by the third week in September, 1886, to have new grounds, more centrally located and of easier access to the citizens of our growing city, as well as to all parts of the county. We will then give premiums that will attract the attention of breeders as well as the patrons of our county fair.

Our organization has been kept in good shape, so that we are ready to commence work with the coming of spring on our new quarters.

The ensuing year has many promises in store; our winter crops promise large yield and there is energy and activity in all branches of business, which is due largely to our "free gravel roads," of which our county has more miles than any other in the State, of her size. Our commissioners have just converted the remaining toll roads into free roads, so that to-day we stand at the head of the list, without a toll road.

Our cash balance remains the same as last year, not having had any expenses nor disbursements.

LEON T. BAGLEY,
Secretary.

JAY COUNTY.

The fourteenth annual fair of the Jay County Society was held on the grounds, near Portland, September 29 to October 2. The weather was fine, and the attendance the largest we have ever had. The entries were beyond all precedent, caused, no doubt, by the fact that they were free, except on live stock, and that was reduced 50 per cent. from former years. All gambling and games of chance of every kind were rigidly excluded, and the result was beyond our expectations. Better order prevailed, both on the grounds and in the city, and the receipts from privileges were greater than in former years when gambling schemes were admitted. Some of our directors prophesied that we would fall short if we cut off the receipts from these privileges, but the results have satisfied them of their error, and if there was no law prohibiting, all would vote unanimously to admit no gambling in the future.

Hundreds of people attended the fair who had not done so for years on account of gambling being admitted, and all went home highly pleased and entertained, and our prospects for next year are brighter than ever before.

The fair was a success financially, and we have a cash balance in the treasury of $1,690 with which to improve our grounds and add other attractions for the future. Our society does not pay dividends, but puts all surplus in improvements and increased premiums.

The show of horses was the best we have ever had, several imported stallions being among the number shown. The cattle, sheep and hogs averaged well with former years, while the poultry show exceeded by far all former exhibitions. The display of agricultural and horticultural products was the best we have ever had in extent, variety and quality, the growing season having been very favorable for their development. The exhibit of needle and fancy work, as well as of culinary productions, was beyond all former efforts, and it was difficult to get them all into the hall set apart for them. The speed ring was not up to the average, part of the races not filling. One of the most novel and attractive exhibitions was a parade around the track of agricultural machinery and implements, each drawn by a team, and making a procession one-half mile in length. Taken as a whole, we consider it the most attractive and successful fair we have yet held.

The wheat crop this year, while not above the average in amount, was never better as to quality. Oats were a good crop. Corn was a large crop as to acreage and amount, but is generally below the average as to quality. Much of it has not dried out well and is mouldy. Hay was a good crop as usual. Potatoes a good crop, and cabbage the best that has been for years.

While the year has been a very successful one with the farmers of this county as to the amounts raised, yet there is much complaint on account of the surplus bringing such low prices as to make it less profitable than in former years. The work of drainage and building free pikes goes steadily on, and we will soon have a county second to none in the State for well drained farms and good gravel roads. Our farmers are taking more pride each year in their business, and the results are telling favorably. The day of slipshod farming is fast disappearing from among us, and careful, intelligent work is taking its place. Better breeds of stock are being rapidly introduced as well as better methods of farming. The increase in the number of agricultural papers taken in the country has more than quadrupled in the past three years, which shows that the farmers are awakening to the importance of the interchange of thought and experience gained therefrom.

Respectfully, L. L. GILPIN,
Secretary.

JASPER COUNTY,

Situated in the north-western portion of the State, comprises 570 square miles. The general character of the soil is varied, and is suited to almost all kinds of grains and grasses, and offers great inducements and unsurpassed advantages to those who are in search of investments in the shape of grain and stock farms.

The northern portion, comprising an area of about 325 square miles, consists of numerous low sand ridges and broad expanses of low lands covered with a scruby, dwarfed growth of timber, which makes good timber for fuel but is of little value for anything else. The low lands every year are covered with a very luxuriant growth of native wild grass, which is put up in great quantities for market and feeding stock; the yield is often from 2 to 3 tons per acre. These lands also make splendid herding grounds for stock, and during the grazing season thousands of cattle may be seen feeding and fattening on the luxuriant grass. These lands but a few years ago were but little sought after, as the tide of emigration and capital flowed onward and westward. But now they are sought after and bring prices ranging from $6 to $12 per acre; they are principally purchased by men of capital and used for stock farms or ranches. The question of drainage is as yet but in its infancy in this county, but it has already wrought a wonderful change in the taxable value of lands; as these lands become drained bluegrass and white clover take the place of wild grass. The soil is of a peaty character, and is from 2 to 5 feet in depth, underlaid with a white sand in some localities, while in others, it is underlaid with iron ore of a very good quality, being about 42 per cent. pure ore.

The central and southern portion of the county is more particularly adapted to farming. All kinds of crops, such as corn, oats, rye, flax and barley yield large and bountiful crops, but winter wheat is not a sure crop and the efforts of the farmer in this direction are often attended with failure. During the season of marketing the crops, long lines of wagons may be seen wending their way to Remington, in the southern part of the county, and Rensselaer, the county seat, the streets frequently being so crowded that it is with difficulty that one can cross them.

Cultivation and improvement have worked a wonderful change in the county in the last twenty years; the old log houses of the pioneers have disappeared and in their places nice large farm dwellings may be seen. Farmers are now turning their attention to underground draining and are laying large quantities of tiling, which are obtained at fair prices at factories at Remington and Rensselaer.

In 1870 the citizens of Rensselaer and vicinity organized our agricultural society, which had for its object the encounragment of agriculture and the improvement of stock. Soon after this, the Remington Agricultural Society was organized, having kindred objects in view, and whatever may be said concerning the quality of all kinds of stock in Jasper County, which will compare in quality and breeding with any other county in the State, is due to the agricultural societies and the influence which they have exerted.

In place of the Indian ponies used by our early settlers, you will see fine large Norman, Clydesdale and other splendid breeds. The "Penroyal" cattle have almost vanished, and Shorthorn, Herefords, Jerseys aud Holstein breeds have taken their places. The best breeds of swine and sheep only are raised by our farmers.

There now appears to be a lack of interest in our county fairs, and there is a variety of opinions as to the cause; some say one thing and some another, but the probability is that the habit of turning them into a kind of legalized gambling institution, where all the rough elements of different communities meet to hold high carnival at the expense of good people of the community, is the grand cause. Farmers with their families have but little interest in anything which takes their hard earned money without giving them value received for the same.

Ezra C. Nowels,
Secretary.

JEFFERSON COUNTY.

The Jefferson County Grange Jubilee Agricultural and Mechanical Association held its ninth annual fair on the grounds of the Driving Park Association at Madison, September 2 to 4. I regret to say that this meeting was not a success in every particular, the exhibits falling short of last year, but were of a superior quality. Almost every department was sparingly represented except the mechanical and farm implement department, which was better represented than in former years. Financially it was almost an entire failure owing to the light attendance, the receipts not being sufficient to pay our rent and the actual expenses of the association for the past year.

The causes of this light exhibit and attendance are various. Our receipts last year were not sufficient to pay the premiums in full, which is the main reason of our light exhibit; the principal reason of the light attendance on the part of the farmers is a prejudice existing against the grounds on which we have been been holding our fair for the last three years; and on the part of the citizens of Madison, there is a prejudice existing against the order that is controlling it.

The association decided at its last meeting to cancel the lease that we held on the driving park, and hold our fairs in the future in the country, where we have always been successful.

Jefferson County is keeping pace with the progress in agriculture, although we can not boast of extra crops the past year, on account of the severe cold weather during the winter, with but little snow to protect our wheat, and a protracted drouth during the summer. Nevertheless, the farmers have a fair amount of surplus products to put on the market, but the depression in prices is making their cash accounts short of what they should be.

Mixed husbandry is almost universally practiced. Stock raising is gradually on the increase, cattle and hogs being ahead. Quite an interest in improving the draft horse has been manifested within the last few years. All the principal roads leading to Madison are turnpike toll roads. The Ohio River being our southern boundary, affords us cheap transportation for surplus produce to Cincinnati and Louisville, where we can always find a ready market. The manufacturing interest is gradually growing, Madison being one of the best locations on the Ohio River as a manufacturing point. Our farmers are awake as to the value of manure and commercial fertilizers, and the importance of growing clover, by the use of which we have in many instances more than doubled the production of land. Stock running at large is almost entirely abolished and many of the outside fences have been taken away.

Barbed wire is gradually taking the place of the old rail fence. Improvements in the way of farm buildings are fully up to an average with other improvements.

THOMAS H. WATLINGTON,
Secretary.

JENNINGS COUNTY.

The Jennings County Joint Stock Agricultural Association held its fifth annual fair at North Vernon, August 4 to 7 inclusive. The show of horses and cattle was above the average, both in numbers, quality and breeding; that of mules, sheep and hogs, not so large as in former years, but of a better quality. The display of poultry, and in the agricultural, horticultural, mechanical and miscellaneous departments, fully met the most extravagant expectations of the managers. The receipts, however, from all sources, owing to the rain that set in Thursday afternoon and continued until late Friday morning, were not so large as the management anticipated. But in spite of this misfortune, and in the face of the fact that a "busted" bank, in which our funds were deposited, absorbed fifty per cent. of our net proceeds, the association was able and did declare and pay a six per cent. dividend on their entire capital stock.

There has been a great improvement in the agricultural, and especially stock interests, in this county since the organization of the society. It is safe to say that the improvements of the past five years, in the mode of farming, handling stock, etc., are greater than those of any ten years previous to that time. The time has passed when farmers depend upon the sale of their timber to obtain the necessaries of life and money to pay their debts. They are rapidly learning how to get it out of the ground, and as a natural result are getting themselves in much better shape, financially and otherwise. The "hand to mouth business" is becoming a thing of the past, as also has the inclination of farmers to look upon their calling as being humbler than others in importance and respectability. As a class they are giving more attention to their business and applying themselves to the study of their profession.

C. D. SHANK,
Secretary.

KNOX COUNTY.

The Knox County Agricultural and Mechanical Society held its fifteenth annual exhibition on the fair grounds, near Vincennes, from October 12 to 17, inclusive. The number of entries was larger than usual, and the exhibition of stock and articles competing for premiums was good.

The past year has added materially to the prosperity of the industrial interests of our county. Its past record has been one of continuous growth, but not until of late years has the condition of the county been such as to show what could be accomplished in the way of agriculture and horticulture.

Our present advantage of drainage has inspired our farmers to a more intelligent system of culture than ever undertaken before, and has developed the fact that farming is not the dull and unprofitable business that it has been held to be, but to the reverse; the rich soil studded with beautiful forest trees—ash walnut, oak, sugar and beech—has become a source of pleasure to the honest and industrious tiller of the soil.

The exhibits this year were all good. Animals and articles that would have ranked well some years ago will hardly pass muster now. In this way our people are being educated up to a high standard of excellence.

The show of horses was good.

In the cattle department there was a fine exhibition. The choice of our people seems to be the Shorthorns and Jerseys, but within the past few years the Holsteins have begun to appear among us, and promise to divide the honors.

The show of hogs was good, being confined to the Poland China, Chester Whites and Berkshire breeds.

The display of poultry was the best ever had, and was divided among a large number of exhibitors.

The mechanical department was well filled.

The agricultural and horticultural exhibits were good.

Of fancy articles and culinary preparations there was seemingly no end, the competition being very spirited.

Floral hall was filled to overflowing.

The trotting and pacing races were up to the average, and seemed to be very attractive to a large portion of the crowd.

The year 1885 has been a prosperous one for the farmers of Knox County, in so far as the crops raised are concerned, but the low prices have made it discouraging to those who depend upon the sale of their crops to raise money to meet obligations and expenses. The wheat crop was good, and of excellent quality. Corn, oats and potatoes were good. Hay was up to the average and was saved in fine condition.

The lands in this county are specially adapted to grass, and hay and cattle are among our ranking interests. Corn is our next best crop, and consequently many hogs are raised. Wheat comes next, and in addition to home consumption we export large quantities of it. Potatoes generally do well, and many car loads are shipped to find a market. Among the small fruits, such as strawberries, raspberries, blackberries, currants and gooseberries do well in our county.

Our farmers are rapidly replacing their old buildings with new and convenient ones, and the old log house is becoming a thing of the past.

Our lands are being speedily drained under the present ditch law. Tile ditches are continually made, and thousands of acres of land have been in this way placed under cultivation, producing some of our best crops.

The barbed wire fence is fast taking the place of the old rail and plank fences, as it is considered more durable, and cheaper.

The county is making most rapid progress in all its industries, and the time is not far distant when she will be pointed out as one of the highly improved counties in the State. A system of levees has thrown the rivers off the low lands, tiling has reclaimed the swamps, clover fertilizing has restored the uplands, until the products of our farms have more than quadrupled in the last ten years. This has given us leisure to build barns, import improved breeds of stock and supply ourselves with superior implements and machinery, and these all combining have given to our farm houses comfort and elegance.

GERARD REITER,
Secretary.

LAGRANGE COUNTY.

The thirty-third annual fair of the Lagrange County Agricultural Society was held at the fair grounds in Lagrange from September 29 to October 2, inclusive. The weather was favorable, the attendance large, and the exhibition much superior to that of any former year.

This year the management hoped to discard entirely the old "family ticket," allowing a whole neighborhood to enter the grounds on a dollar, but did not fully succeed. As a consequence, the receipts from sale of tickets fell short of the amount that should have been realized from the large number of people in attendance.

Last spring found the Society in no shape to hold another fair. The buildings, stables, pens and fences were in a wretched condition. About $1,200 were expended in improvements, which placed the society fairly on its feet again.

The number of entries was nearly double that of last year. The entries in horses and cattle filled every stall on the ground and the display was much superior to that of any former year.

The exhibit of sheep and swine was fairly good, but in poultry inferior to that of last year. The exhibition of agricultural products was the best ever shown here. The different specimens of fruit on exhibition were very fair.

The ladies made an excellent display in fine arts and textile fabrics, and the mechanical department was well represented.

Agriculture is the leading industry of the county, and the growing of wheat, corn, oats and grass ranks first in importance. Stock raising is by no means neglected. Many valuable draft horses, and horses for all work, are raised and shipped to Eastern markets, and the markets of Northern Michigan. This has become quite a lucrative business with many of our farmers.

There are not many native cattle in the county. Our cattle are mostly grades from the Durhams. Besides the grades there several herds of pure-blooded Durhams, Jerseys and Holsteins.

Sheep raising has been, and still is, one of the specialties of the the farmers of the county, but the very low prices of both wool and mutton are causing some of the best farmers to abandon sheep raising entirely. Sheep men here, unlike those of many other localities, find no fault with our dog law, for the reason that the revenue derived from the dog tax pays all damages to flocks and leaves a balance for the school fund.

Th Poland China is the favorite pig here, though the Chester White and Berkshire have their friends. The Jersey Red tried to get a foothold here, but there was no room for him beside his more fortunate competitors, the Poland China, etc.

Hog cholera has not prevailed to any considerable extent the past year, and the losses therefrom have been inconsiderable. Prices of hogs have been low, but perhaps not proportionately lower than other farm products. A large number of hogs have been shipped to market, making an important addition to the farmer's income.

The grain and grass crops were a fair average, and the weather as a whole was unusually favorable for planting, growing, maturing and harvesting them. Both in yield and quantity the wheat crop was one of the best ever grown here. Corn on sandy gravelly soil was never better, but much of that grown on heavy clay soil was damaged by cut-worms, and had to be replanted; consequently there is considerable soft corn.

The growth of grass was good, and a large amount of hay was secured in excellent condition. The yield of cloverseed was better than usual, in some cases as high as five bushels per acre being obtained.

The yield and quality of potatoes were good, and enough were raised for home consumption, with a small surplus for shipment abroad.

Apples are about the only large fruits produced in the county, of which we have a good supply for home use. Small fruits succeed well, but enough are not grown to supply the home demand.

This section escaped the usual after-harvest drouth that so often cut short the corn crop, and interferes with the plowing for wheat. This fall the wheat was put in the ground in good condition but many fields are badly damaged by the fly.

Originally Lagrange County could boast of an abundance of the best timber in the State, and there is still growing in its forests much valuable timber, such as walnut, white-wood, oak, ash, hickory, beech, maple, etc. Farmers have been very enterprising in removing stumps and stones from their fields, and now nearly all grain and grass is cut by machinery. The old worm rail fence still predominates; but of late a good deal of patent straight rail fence wired together has been made with considerable post and board fence, and some osage orange hedge. Barbed wire does not meet with much favor.

A strong sentiment against stock running at large is rapidly developing, and it will not be many years longer that farmers will be compelled to fence stock out.

The farm houses are mostly frame dwellings and will compare favorably with those of any other section; while the barns, especially in the western portion of the county, built by the Amish people, surpass in size and excellence.

Recently considerable underdraining has been done, while for years past much money has been expended in cutting open ditches to drain the marshes and other low lands.

Improvements in the highways have not kept pace with other improvements. Practically we have no gravel roads and there is not a good road leading into the county seat. No general public sentiment in favor of better roads has yet been developed. No doubt the time is coming when the attention of our people will be turned in this direction.

Although our fair was not as successful financially as its managers hoped it would be, still in every other respect it was a pronounced success. Its reputation was so bad from a failure to pay in full its premiums of last year, that only the most sanguine dared hope for success. Its reputation has been fully restored, its large award of premiums paid in full, and the general expression of the people is that of confidence restored.

With the present outfit of buildings, floral hall, grand stand, stables, stalls and pens, its beautiful grounds and splendid track, the outlook for holding a successful fair next year is very encouraging.

ELIAS WIGHT, *Secretary.*

LAKE COUNTY.

Lake County lies in the northwest corner of the State, Lake Michigan being on our northern border. Crown Point, the county seat, is forty miles from Chicago. Our geographical position is unsurpassed—500 square miles of territory lying at the south end of Lake Michigan, and our county is nearer to Chicago than any in Illinois, except Cook County. With the exception of the region on the Lake, ours is a land of prairie and groves. Crown Point is one hundred and thirty-seven feet above Lake Michigan, and the health of the county is above the average. This county is becoming noted for its good horses, having fine specimens of high bred Normans, Clydes, English draft, and numerous other well known breeds, all of which were well represented at our county fair, which was held at Crown Point from the 6th to the 9th day of October. The entries for horses exceeded all previous years.

We had more cattle shown this year than last, consisting of Durhams, Herefords, Holsteins, Jerseys, natives and grades. The Holstein was more fully represented this year than any of the other full bloods. Our nearness to the great city explains this, as milk has become one of our chief sources of income.

Sheep fill but a small part of the stock upon our farms in this county; the tendency is to the raising of breeds more for mutton than for wool.

We had all the best breeds of hogs common to the Northwest, forty-four entries for all classes, a falling off from previous years.

Fancy poultry is receiving more than usual attention, the display exceeding all previous fairs.

The floral hall was well filled with woman's work, and the display was excellent.

The class for farm and garden products did not come up to a high standard.

Corn is one of our chief products, and the seed adapted to this latitude should receive more attention than it does.

The business side of a fair should be one of its foremost features. The manufactured and mechanical departments had a number of entries, comprising all the labor-saving implements common to our farms.

The new fencing is nearly all barbed wire.

Stock is taken care of by its owners and does not run at large to molest and rob other people.

Our chief crops are corn, oats, potatoes, hay, rye, and winter wheat to some extent.

Our exports are cattle, horses, hogs, butter, cheese, milk, hay, clover, grass seeds, garden products, etc.

The title to the fair grounds, comprising forty acres, is vested in the county, forms an amphitheatre from every view, and is a place of resort opened to the people of the county for all public gatherings.

JOHN E. LUTHER,
Secretary.

LAPORTE COUNTY.

The Laporte County Agricultural Association held its thirty-fourth annual fair on the fair grounds near Laporte, September 22 to 26, inclusive. In many respects this exhibition excelled previous exhibitions, while in many other respects it was deficient, especially in the matter of attendance. One reason for this: a neighboring and adjoining county held their fair the same week, their liberal premiums and other special attractions had a tendency to divide the patronage of the people, much to the disadvantage of both and notably to us.

The display in the various departments was equal to that of former years, excepting in hogs and poultry. Horses have always been foremost at our agricultural fairs, and this year was no exception to that rule. Our exhibition of blooded stock would have been creditable to a fair of much greater pretentions. There is a rivalry among the breeders of the several kinds of blooded stock, each being prepared to maintain the superiority of their particular breed for action, draft, beef, pork, mutton, or wool, as the case may be, which apparent rivalry is most beneficent in its effects, as scrubs are 'gradually giving place to pedigreed stock, and the different breeds, instead of working against each other, are, in reality, making their fight against the inferior grades.

The exhibit in the agricultural and mechanical departments was good, and also there was a very creditable showing in the horticultural department, which would have been much better had our fair been a couple of weeks later, many products of the farm not having fully matured.

A marked improvement is noticeable each year in the condition of agriculture. I am not prepared to give the statistics of this year's crop, but they excel former years in quality as well as quantity. Every improved implement for tilling the soil is being put to use, thereby doing away, in a great measure, with the drudgery of a farmer's life.

More substantial improvements have been made the past year at the county seat than for many previous years. A magnificent city hall has been erected, streets have been paved and modern business houses have been erected, while in our "Harbor City" (Michigan City) extensive glass works have been erected and are in successful operation. Permanent and lasting improvements have been made upon the harbor, which is not only the pride of Michigan City, but Laporte County. The same can be said of dwellings and other buildings in the county, both for the comfort and convenience of farmers. Many of the improvements in the condition of agriculture are, in a large measure, due to the influence of our county fairs and our excellent agricultural journals, which are almost indispensible to successful farming. It is a fact, that the farmer that has no interest in our county fairs, and is not a reader of our agricultural journals, is living many years behind his more enterprising neighbors.

Every possible encouragement should be given to our agricultural fairs, the importers and breeders of stock, the manufacturers of improved machinery and implements, and the circulation of such literature that has for its object the advancement of good morals and the improvement of agriculture.

GEORGE C. DORLAND, *Secretary.*

MADISON COUNTY.

The Madison County Joint Agricultural Association held its eighteenth annual fair on its grounds within the city of Anderson, from August 31 to September 4, inclusive. The attendance was not as large as at the last fair, owing, no doubt, to bad weather the first of the week. Great interest was manifested by those who were in attendance, and taking into consideration all the circumstances connected with the meeting, it was a success. All branches of industry in the county were represented. The display of live stock and farm products was one of which the farmers of Madison County have good reason to feel proud. The floral display and articles of domestic manufacture on exhibition were indeed a credit to the ladies of the county. It bespoke not only their industry, but also that exquisite taste which only the ladies know so well how to display.

Several of our farmers are importers of fine horses, cattle and sheep, for breeding purposes. Our exhibit of machinery was very good. The display of buggies and carriages attracted a large share of attention. The show of cattle was good and presented a marked improvement over the showing of former exhibitions. The entries in hogs, sheep and poultry were the largest for years.

Corn raising predominates over every other enterprise; the yield this year is above but the quality is below the average, farmers selling it at twenty-nine cents. Wheat raising is about the same as previous years. Agriculture in our county, generally speaking, is in a prosperous and progressive condition. The important subject of drainage is receiving careful attention. Drain tiles are in general use, and in consequence, many swamps and wet spots, once profitless, are now thrifty fields. Our public highways are receiving much better attention now than formerly, the most of them being in good condition. A few sheep still survive the dogs' ravages.

The improvements made by farmers are on the advancing scale; all are improving their buildings, while many are building residences that vie with the towns and cities in elegance. May the good work go on.

C. K. McCullough,
Secretary.

MARION COUNTY.

The season for sowing, cultivating and harvesting has closed for the year, and the Marion County Agricultural and Horticultural Society takes a retrospective glance upon the work just closed, and sends a hopeful greeting to the year but recently ushered in, hoping the farmer may draw some lessons from his failures or successes to aid him in the conduct of his business in the future.

The Society held monthly meetings, when subjects were discussed suited to the season, the Programme Committee arranging the work for each meeting in an admirable manner.

In June the Society made an exhibit of strawberries and flowers in the State Board Rooms, which would be hard to excel. The display of strawberries was large and the quality choice. Premiums were awarded, and the interest manifested in the exhibition was truly gratifying.

From July to September, inclusive, the Society met by invitation with members in different parts of the county.

In January the Society offered two premiums of thirty and twenty dollars for the best and second best farms, and two premiums of fifteen and ten dollars for the best and second best garden. Also, two premiums of fifteen and ten dollars for the best and second best essays on "The Ideal Kitchen." The award on farms to be made in November; on gardens, in August, and on essays, at the April meeting. Three ladies entered the lists as competitors for the premium essay, and at the April meeting the committee awarded the first to Mrs. A. G. Chandlee, and the second to Miss Ada Richardson.

Four persons entered on gardens, and at the August meeting the first premium was awarded Sylvester Johnson, of Irvington, and the second was divided between Mrs. Mary Flisk, of Lawrence, and Allen Wilson, of Irvington, the committee finding these gardens equally worthy.

There was no competition for the premiums offered on farms. The display of vegetables and fruits at the different meetings has been good.

The horticulturists of this vicinity are raising small fruits extensively, and with good results. The Society has been fortunate in being entertained and instructed by valuable addresses, such as the following: "Harmony of Nature," by Prof. Troop, of Purdue University; "Training Nurses," by Miss Hunt, of Indianapolis; "Practical Reasons for the Study of Natural History," by Prof. Hay, of Butler University; "The Farmer and His Hired Help," by D. L. Thomas, of Rush County; "Fruits and Flowers, and Their Influence on Home Life," by Judge D. W. Howe, of Indianapolis; "Does Fruit Growing Pay?" by Mr. Albaugh, of Dayton, Ohio; "Small Fruits," by N. Ohmer, of Dayton, Ohio; "Brains and Education in Farm Life,'. by J. J. W. Billingsly, of Indianapolis.

The interest in the meetings is unabated, and the thoughtful farmer can not fail to extract some knowledge from the discussions and the experiences of others that will meet his own peculiar wants. Eternal vigilance is the price paid for well-filled granaries and neat, tidy farms. A simple knowledge of the time of planting and harvesting is but the alphabet of knowledge needed by him who would be a thrifty farmer. May the time speedily come when the great majority of the farmers are men of the broadest culture. Then will be brought to light the hidden resources of the soil, bringing multiplied wealth to him who intelligently notes the seed time and harvest. We believe the exchange of experience, the discussion of methods, the laudable desire to excel in results, incited by the award of monthly premiums, are of more practical benefit to the members of this Society, and is a greater means of culture, than an annual fair could possibly be.

MRS. J. G. ADAMS,
Secretary.

MONROE COUNTY.

After a suspension of several years, an Agricultural, Horticultural and Mechanical Society is as well established as could be expected from one year's success, but not without the cares and troubles incident to all noble enterprises that go toward the upbuilding of a community or a county. More than a year ago by the call of a number of our leading farmers, a meeting was held in Bloomington, and the new Agricultural Society of Monroe County was organized. A month later a full set of directors and officers were elected—seven of the first, and the usual number of officers. Unfortunate circumstances that ended the organization years ago now came up to plague the new association, but determined men that knew not that word *fail* took upon themselves a large amount of indebtness secured only by the risks of the future, and entered upon the duties before them. The time for the fair came October 6 to 9, and with it came the people, as is well attested when it is stated that a large amount of indebtedness was cancelled, the usual expense borne and every premium paid in full. The show of stock was never before equalled in Monroe county, while the other departments were well represented. Nor was the stock of an inferior quality, but worthy to exhibit at any such exhibition. So, starting without a penny or even the hearty co-operation of many good citizens, the Board of Directors, headed by John F. May, the president, and an untiring worker, are gratified at being able to report, that after building stalls, pens, halls and incurring the necessary expenses accompanying the beginning of a county fair, paying off all the premiums as advertised, there is more than fifty dollars left for the year 1886, when the society expects to add much to the accommodation of the grounds and the value of the exhibition.

S. W. BRADFUTE,
Secretary.

MONTGOMERY COUNTY.

As the time for the opening of the sixth annual exhibition of the Montgomery County Agricultural Association drew near, many were the doubts expressed by those interested, as to the weather. In every department the entries were pouring in, exceeding by far anything in former years, and from this fact and that of having expended large sums of money on improvements and ornamentation, we were all exceedingly anxious that the weather smile upon us as it had for five consecutive preceding years. Monday, September 7, our preparation day, gave us great promise of a good week, but after the sun went down that night it did not shine on our ground again until Friday. Although it rained but little, the outlook from day to day was very discouraging, and even on Thursday, the big day of all fairs, it seemed impossible the elements could longer be stayed, but notwithstanding this, there was an outpouring of the people to the number of twenty thousand, as was shown by the gate receipts that night.

The exhibition of 1885 was certainly the grandest in the history of Montgomery County. In the horse department nothing to excel it was ever seen outside the great St. Louis fair. Forty-nine entries for sweepstakes stallion made a grand sight as they were drawn up in line before the judges.

Every department was full and complete.

About $3,000 was expended the last year in improvements on the ground, and the association will, no doubt, place other substantial improvements the coming year.

With each succeeding year our county becomes more thickly settled, our miles of gravel road increase, our manufactories increase in number and capacity, our land receives more drainage, our country as well as our city residences are built and furnished finer, our children are becoming better educated, and everywhere and on every hand do we have the assurance of advancement and prosperity.

Our county will rank among the very first in the State, the eastern boundary being but thirty miles west of Indianapolis. Four railroads cross the county, thus enabling us to reach any market by through and direct transportation.

A drive through the county will show you at once that the farmers are thrifty and prosperous, as dwellings, barns, fences, etc., will attest. The rail fences are fast giving place to those of more beauty. The wet land, of which years ago we had an abundance, has almost all been under-drained, not only making the best farms, but greatly improving the health of the county.

Rock River, or Sugar Creek, as it is commonly called, with its numerous tributariet, affords excellent facilities for all branches of manufacture. On these streams may be found the celebrated Younts woolen mills and many other manufactories, flouring mills, etc.

Much might be said of our blue grass pasture lands, for certainly a great part of it is not excelled by any, not even the famous blue grass regions of Kentucky, and I trust all who read these reports will have gleaned from my scattering comments that we have what we claim—one of the finest counties in the State.

F. L. SNYDER,
Secretary.

NEWTON COUNTY.

The seventh annual exhibition of our agricultural society was held on our fair ground, adjoining the city of Morocco, from September 15 to 18. In all respects the fair was a grand success.

The weather was fine, all departments well represented, and every one seemed pleased and satisfied. Each succeeding day added to the attendance until, on the last day, the ground was crowded with visitors, fully demonstrating the necessity of larger grounds.

The most popular feature of the fair, the horse department, had a good representation in all classes, from the heavy imported draft, with their grades, down to the general purpose.

In cattle, the Durhams, Holsteins, Herefords, Jerseys and grades were represented. In the sheep pens were but two classes, the fine wools and the downs. The hog pens were full of pure bred Poland-Chinas and Berkshires.

The most of the stock on exhibition is owned by the farmers of our own county, evincing the interest our people take in the fair.

Of farm and garden products the entries were very large and the quality very good.

The show of fruit was very small, owing to the trees being winter-killed.

The art hall was attractive, being completely filled with specimens of women's handiwork and collections and displays of art.

After all the demonstrations of pleasure manifested about the race track, to talk of leaving out the horse! Can we do it? I fear not until you change human nature.

Our agricultural interests are corn, oats, wheat, grasses, potatoes and millet.

Quite an improvement is noticed in our roads since graders have been introduced. Our fencing is principally osage hedge, wire, and boards.

In general our county ranks with the leading counties of the State.

C. M. Hanger,
Secretary.

NOBLE COUNTY.

The Noble County Agricultural Society held its thirtieth annual fair on the grounds of the society at Ligonier, October 13 to 17. On account of bad weather the first part of the fair the directors concluded to continue over and include Saturday, which proved successful. The members of the society put forth an extra effort to make the fair a success, and we are safe in saying that it proved to be equal if not superior in every way to any exhibition heretofore made on the grounds. The display in horses was exceedingly fine. Our show in standard-bred trotting horses was large, as was the show of standard-bred Clydesdales and Normans, there being on exhibition some fifteen imported Clyde and Norman stallions and two full-blood mares. The half-bloods were extra fine and the number large, from sucking colts up to six-year-olds. The grade and carriage horses made a fine display and attracted a great deal of attention. Those of us who have been connected with the society for over twenty years and have watched the steady improvement during that time in the horses exhibited at our fair, can not help but attribute it to the society in a large degree. In fact the show in stock of every kind has been largely improved in this and adjoining counties.

Our show of Shorthorns, Jerseys, Holsteins and even the graded cattle was good, and the number exhibited large. A marked improvement was also perceptible in the hogs and sheep on exhibition. The poultry show was the best we ever had. The floral hall was well filled, and the articles of a superior character. The ladies deserve a great deal of credit, and were it not for them fairs in this part of the State would be a failure. The agricultural hall was pretty well filled, but could have been improved upon. The mechanical department was up to former years.

Noble County has a rich fertile soil, well adapted to raising grain. Wheat is our chief product, and seldom ever fails. We have quite a number of fine lakes which should be stocked with fish, and we would call the attention of the Fish Commissioner to this fact. Our farmers are thrifty and intelligent. Our schools are in excellent condition. A great deal of ditching is being done in the county, and our wet lands are made as valuable as any soil we have for grazing. Our roads should receive more attention. We have good gravel, which might be utilized, and our roads put in excellent condition. The society feel as though they have been useful in the past, and we are encouraged by the results witnessed from year to year. We expect to make still greater effort next year and add more improvements to our grounds.

D. W. Green,
Secretary.

PARKE COUNTY.

The sixth annual fair of our agricultural society was held at Rockvile, from August 17 to 22, with fine weather and a good attendance.

In the horse department there was the best exhibition ever shown here, there being forty entries for sweepstakes, the horses being mostly owned by farmers and stock raisers of our own county.

The cattle show was very satisfactory, consisting mostly of the Shorthorn breed.

The sheep and hog department made a good showing, both from Illinois and Parke County.

The poultry department was well represented, as we have several in this county who make a specialty in the raising of fine chickens.

In the agricultural, fine arts, and in fact in all the departments, the exhibits were very good.

The wheat crop the past season was about a half-crop, and of poor quality.

The corn crop was unusually large and the quality was good.

There has been marked advancement for years in the matter of drainage, especially in the eastern part of the county, the western and southern portions being principally bottom lands.

Free gravel roads are the most important improvement to the county, and are being kept in good order.

This society is in excellent working order.

W. J. White,
Secretary.

PERRY COUNTY.

The fourteenth annual fair of the Perry County Agricultural and Mechanical Association was held on the grounds near Rome, beginning September 28 and closing October 2.

The weather was very inauspicious. It rained from the opening day until the close of the fair. Notwithstanding this we paid all our premiums in full.

We had an excellent show of horses, consisting of one hundred and eleven entries. Also, a good show of cattle, principally Holsteins and Jerseys, and a limited show of sheep and hogs.

We had a most elegant show of poultry, consisting of bronze turkeys, Pekin ducks, Plymouth Rock and Bantam chickens.

The display of grain and vegetables was much larger than in former years.

We had a beautiful floral hall and the bad weather did not keep the ladies from decorating it nicely with ornamental needle work, painting, fine arts, etc.

As to the crops: Wheat was not an average; corn very good, and plenty of stock to consume it; hay crop short one-third, but a good article; oats, never a better crop nor a better article; in potatoes, owing to drouth the crop was somewhat short, but much better than the farmers expected.

Our farmers are improving their land more and more every year and are buying all the late improved farming implements.

We will conclude by saying that the farming and stock interests of Perry County are up to the standard.

W. C. Cunningham,
Secretary.

PIKE COUNTY.

The fifteenth annual fair of the Pike County Agricultural Society commenced August 31 and continued until September 5. It was held on the society's grounds adjoining Petersburg. The fair was a success. The entries in all classes were largely increased as also our receipts. We prohibited both gambling and the sale of liquor. The result was that every thing went off pleasantly and good order and decorum prevailed. The very liberal patronage that has been extended to our association not only by the citizens of our own but neighboring counties from its organization to the present time, is very gratifying to the management, from the fact that it proves the public appreciate our efforts to make our society an active and efficient agent in promoting the interests of the farmers and stock raisers.

The crops this year were above the average, with the exception of wheat; that was very light, especially where sown in corn grounds or on lands that had been kept continuouly in wheat for years; while the yield from clover sod was generally satisfactory. In this connection, I will state that our county is so productive that our farmers have been enabled to raise large crops of corn, tobacco, wheat, and all the grasses with comparatively a small amount of labor, and no expense for artificial or commercial fertilizers. This has resulted in making farmers somewhat careless in properly preparing their grounds for a crop, and in cultivating the same. There is no question in my mind but that by proper tile draining, the more general use of clover as a fertilizer, and the feeding of the grain and grass produced on the farm to stock, would so improve our naturally rich soil, that with careful cultivation, the average yield of wheat in this county could be raised to 25 bushels per acre, and all other crops in proportion.

In furtherance of this object, our society in its last premium list offered liberal premiums on the following staple farm products: For the largest yield and best quality on 5 acres of corn, wheat, oats, tobacco, clover and timothy. No entry fee was charged and we required those competing to give a detailed written statement as to time of planting and sowing, the quality of seed used, the quality of soil, the manner of cultivation and indeed every particular that would be of advantage to others engaged in producing crops. We intend in the future to still further increase our premiums on farm products, believing it will stir up a laudable emulation amongst farmers, that will result in so increasing the productiveness of our soil by the use of fertilizers and improved tillage, that a farmer will be able to produce as much on 10 acres as he now does on 20 under the present system of farming. Every one must admit, if this result can be attained, it would be a great saving of labor and profitable to the producer. Live stock of all kinds have been very healthy in the county during the present year. There are less hogs and cattle feeding than in former years. Sheep have been sold off very close. There are not one-third as many sheep in Pike county as there were one year ago, and my impression is, that other counties and perhaps the whole State will show a very large decrease in the number of sheep. This, I think, very unfortunate, for it is an undisputed fact, that a few sheep are almost indispensable on a farm, not only on account of the wool and mutton, but from the fact that they keep the fields and pastures where they run free from sprouts and worthless weeds; and, also, for the value of their manure. It has been demonstrated both in this country and England that where sheep have been folded in movable hurdles, so as to distribute the droppings evenly over the ground, the yield of wheat has in many instances been double. In view of these facts, it certainly is both the duty and interest of the National and State Governments to protect and foster this great industry. In proof of this position, under the operation of the protection given by Congress, in 1860, which imposed a heavy duty on foreign wool, the sheep have increased in the United States from 22,000,000 to over 38,000,000, and the wool has increased in a still greater ratio; the entire amount produced was a little less than 100,000,000 pounds, in 1860; the crop of 1885, is over 240,000,000 pounds, and at the same time the value of manufactured woolen and worsted goods has been wonderfully developed. The total value of these goods manufactured in the United States in 1860 was a little over $65,000,000. In 1885, it is estimated that the amount will exceed $250,000,000. In brief, we manufacture five-sixths of all the woolen and worsted goods which are consumed in this country, and, also, grow four-fifths of the wool used in the manufacture of this immense amount of goods. And, further, instead of increasing the price of this class of goods to the consumer, it is a well known fact that clothing, carpets and all articles manufactured from wool, are from 25 to 33 per. cent. cheaper than in 1860 and of a much better quality.

I think the present State law fails to give proper protection to sheep growers, as the revenue from the dog tax steadily decreases while the dogs continue to multiply. It is now found that in many townships there is no money in the hands of trustees to pay for sheep destroyed by dogs. This state of things will continue to grow worse unless we resort to the license system, and every dog that is not protected by having the license paid, be killed. All the necessary regulations to carry this measure into effect could be provided for by the Legislature. In concluding this subject, I appeal to every farmer in the State of Indiana to seriously consider the importance of sheep husbandry as affecting these interests, and the dangers which now threaten its destruction, and if possible place this great industry on an enduring and solid basis of prosperity.

In regard to our roads there has been no improvement in the manner of working them, and consequently no improvement in their condition. Public opinion in this county is gradually drifting in favor of the enforcement of the stock law, and I think in the near future it will be adopted.

GOODLET MORGAN,
Secretary.

PORTER COUNTY.

The fifteenth annual exhibition of the Porter County Agricultural Society was held on the grounds adjoining the city of Valparaiso, September 15 to 18, inclusive, and was thought by many to be the best held since its organization. In some respects it undoubtedly was. There seemed to be a general interest manifested by all, and where such a spirit is shown success will usually follow. All demoralizing features were excluded and good order, fine weather, with all the departments well represented, made it pleasant and profitable for those in attendance.

The show of horses was perhaps the best ever on exhibition in the county. The stock of all kinds showed plainly points of good breeding. There are several parties now in the county owning as good stock as money will purchase, from the best breeders of our own and foreign countries. The exhibits in all departments were justly entitled to much praise.

The following is a brief statement of the industries of the county:

Acres of wheat 12,526, average per acre 18 bu., quality good; acres of corn 24,985, average per acre 30 bu., chaffy in parts; acres of oats 16,704, average per acre 35 bu., quality good; acres of potatoes 246, late kinds were more or less rotten; acres of timothy 22,073, average per acre 1 ton; acres of pasturage 40,056. There are also 17,699 head of stock cattle; horses, 5,345; fat hogs, 15,760; dairy cows, 7,322, the products of which were 49,800 lbs. cheese, 264,603 lbs. butter, and 1,504,693 gallons of milk. There is also a growing interest in the apiary industry, there being 555 colonies in the county.

In the northern part of the county are very extensive brick and tile works, employing about 400 men. There are also others of less magnitude.

A great reform is noticeable on farms in the last few years; the old slipshod manner of letting things go at loose ends is past, stock being provided with large, warm barns for storage of food and shelter. Two reasons may be given for the reform: Our farmers have now the means to provide buildings, and have learned that, for profit, good stock and care are essential. The want of means heretofore hindered many from adopting this system of economy.

E. S. BEACH,
Secretary.

PULASKI COUNTY.

The Pulaski County Agricultural and Mechanical Association held its annual fair on its grounds one-half mile west of Winamac, from the 8th to the 12th of September. Our show was not good, except in agricultural hall, which was probably the best we ever had. We attribute our failure to a lack of interest on the part of the farming community.

Our crops were very good, wheat especially being above the average; corn on our low lands being overtaken by frost gave us considerable soft corn; oats were plentiful; fruit almost a failure.

Our roads instead of being the best are a portion of the time the worst, or in a bad condition to say the least, especially over low lands, and over high ground they are sandy, there being no gravel easy of access. Our fences are constructed principally of wire and pine lumber. Public ditching is being extensively carried on at present, and in a few years our low lands will be under a good state of cultivation. We have one very good tile factory in the county, and large quantities of tile are being shipped in from other places. We have three railroads crossing the county, but one of which passes through Winamac. We have no extensive manufactories of any kind, but our facilities for water power are such that we hope soon to be able to report some such enterprise.

A. D. PERRY,
Secretary.

PUTNAM COUNTY.

This county has within her borders twenty-three postoffices, so situated that each neighborhood is convenienced to a daily or tri-weekly mail. The soil is more varied than is usually found in the same area, being level in the northern and eastern portion, and largely of a black loam; central, rolling, soil of a lighter quality, and readily showing the effects of good or bad farming, while the southern portion has what is known as the "beech flats," which, when well drained, yield the very best quality, as well as large quantities, of timothy hay, and is fair for cereals. The southwest part of the county is much broken, and along the numerous streams are wide and fertile bottoms.

During the past year about one hundred and thirty-five miles of free gravel roads were built or completed, tapping all parts and enabling our farmers to market their products during the winter months.

Improvements in houses, barns and bridges are extensive.

Farmers are housing food and sheltering stock with satisfactory results. They are also becoming cognizant of the value of clover as a fertilizer, as may be seen in the following comparative table for the years 1884 and 1885:

	1884.	1885.
Wheat	42,000	36,000
Corn	42,000	36,000
Oats	6,000	7,000
Timothy	22,000	17,000
Clover	1,200	17,500
Blue and other grasses	100,000	100,000

Speaking in round numbers we have 142,000 rods of drain tile in use, redeeming many thousand acres of our best soil from poisonous malaria.

The agricultural society, while keeping up its organization, has not held a fair for several years, owing to a want of harmony between the horse and cattle men. The organization is preparing for the purchase of grounds and the holding of a fair that will be in keeping with this, in other respects, leading county.

W. S. Cox,
Secretary.

RANDOLPH COUNTY.

The Randolph County Agricultural, Horticultural and Mechanical Association held its fifteenth annual fair on the grounds of the society, commencing on September 14 and continuing five days. It was one of the most successful fairs ever held in the county, not only in a pecuniary point of view, but from the evidence given by the number of entries recorded.

The entries in most of the departments were fully up to those of former years, and the articles in many departments showed decided improvement, which in an agricultural point of view is indicative that the county keeps well to the front and up with the times.

The agricultural condition of this county has wonderfully improved during the last few years, and compares favorably with that of any other in the State. Hundreds of acres of land have been redeemed by cutting large open ditches and then tiling into them. There are now some thirty tile factories in the county, nearly all running their full capacity, and finding ready sale for all they make.

Randolph was among the first counties to take advantage of the "free pike" law, and to-day we have nearly four hundred miles of gravel roads, two-thirds of which are free, and the balance promise soon to become so.

The yield of wheat in 1885 was above an average, both in quantity and quality, and saved in good condition.

During the summer and fall the corn crop promised to be one of the largest ever raised in the county, but from some cause much of the crop, when it was gathered, graded low, on account of the mouldy condition of many of the ears.

Oats were fully up to former years; the hay crop was the largest ever cut in the county, and was nearly all saved in excellent condition.

The fruit crop, with the exception of apples, was good. The apple crop, with the exception of summer and some fall varieties, was almost an entire failure. Still, by the effort of some of the members of the Randolph County Horticultural Society, one of the best displays of fruit ever gathered together in the county, was placed on exhibition at the fair, a portion of which was afterwards a part of the society's exhibit at the State fair.

Our primal forests were composed of poplar, walnut, hickory, beech, ash, sugar maple, and different kinds of oak, but nearly all of our walnut and poplar timber has fallen a victim to the insatiable demands of commerce, and the oak and ash is fast disappearing; and as the timber is taken off, the land cleared and cultivated, and farms improved, farmers are building good, comfortable dwelling houses. Many have large barns tastefully finished and painted, with all the necessary outbuildings to add to their enjoyments and the comfort of their stock.

Brick school houses in most of the districts, furnished with all the modern improvements, and the grounds surrounding many of these are planted with ornamental trees, which suggest to the stranger, wealth, comfort and refinement among the inhabitants of the neighborhood.

D. E. Hoffman,
Secretary.

RIPLEY COUNTY.

The fair held at Osgood, August 12 to 15, sustained the well-earned reputation of our fair. The weather was favorable the greater part of the time, and the display in all departments unusually large and attractive, the stock show being the finest ever held in the county. The ladies deserve especial praise for their handiwork exhibited in floral hall, it being much more varied and elegant than in former years.

In farm products the exhibit was exceedingly good, considering the fact that this is one of the earliest fairs held in the State. Agriculture is, indeed, receiving a new impetus in our county, many using commercial fertilizers extensively. Tiling is reclaiming and making productive some of the country, and drainage is becoming each year more appreciated. A tile factory has been in operation near Osgood for several years past.

The corn crop was the best ever known here. The wheat yield is yearly increasing, and notwithstanding the short yield generally this year, there will be a large export of flour from the eleven flouring mills operating in the county. Hay is also largely exported. The Ohio & Mississippi and Big Four roads, which traverse the county, afford easy means of transportation.

Our people appreciate the value of fine stock, and, as a consequence, Holstein, Jersey and Shorthorn cattle are largely on the incraase.

Free macadamized roads are being constructed extensively here.

The large stone quarries near Osgood and Holton are in successful operation, and yield an excellent quality of limestone, which is valued by contractors and builders as possessing durability second to none.

Though many are turning attention to farming who formerly depended mainly on timber for support, there are still large quantities of lumber and staves exported. A cut stave business is in successful operation at Osgood. There is also located here a furniture factory, a planing mill and a foundry. Several large furniture factories, a bucket and a coffin factory, are doing a thriving business in the northern part of the county.

Religious and educational interests, as well as agricultural and manufacturing, are "on the move," and we are destined to take rank in enterprise with the first counties in the State.

E. D. FREEMAN,
Secretary.

RUSH COUNTY.

The Rush County Agricultural Society still holds its place in the front rank of county organizations, and although surrounded with the most discouraging circumstances at their last annual exhibit, September 8 to 12 (being visited by rain the first three days) nevertheless it arose, Phœnix like, from the mud (not ashes), continued the fair over Saturday, and in spite of all opposing forces, had one of the most successful and satisfactory exhibitions ever held on the grounds.

The society had erected, at considerable expense, a magnificent new grand stand, added new stables for the accommodation of exhibitors, had beautified and improved the grounds in many ways, and had expected nothing but success.

The last days were days of sunshine, and consequently brought crowds of people; every dollar offered in premiums was paid, as has always been the case. The improvements have all been paid for, and a few dollars above a hundred will pay everything the society owes.

The exhibits in all departments were fully up to the standard, except in vegetable hall. The poultry display is worthy of special mention. In most of the classes the entries were far ahead of previous years. In the speed ring the classes were all filled, and the entertainment most satisfactory, the races being trotted and paced to rule and for blood.

The free-pike system has struck this county, and many people think that this and the miles of public ditches, together with the perfect network of tile drainage, will make this a perfect paradise for the husbandman.

The wheat crop was not up to the average of the two preceding years. The corn crop was excellent, and more of it marketed this year than ever before, chiefly on account of the ravages of hog cholera.

The breeding of fine stock of all kinds has received a new impetus in the county, and the farmers all seem to realize the fact that it costs no more to raise good stock than it does scrub; consequently, fine poultry, hogs cattle and horses may be found on every good farm, and Rush County has become a market for the world.

F. B. PUGH,
Secretary.

STEUBEN COUNTY.

The tenth annual fair of the Steuben County Agricultural Association was held on the grounds of the association at Angola, Ind., October 12 to 16. The weather was very bad the first three days and fully one-third of the articles entered upon the books were not placed on exhibition at all, the roads and weather preventing their being brought in. The executive committee of the association set apart twenty-five dollars to be paid in premiums for school work. On Wednesday, October 14, the school officials, teachers and pupils of the Steuben County schools were invited to attend the fair, and were admitted to the fair grounds free of charge. Premiums were offered for the best exhibit of school work, best exhibit of school work from district schools, best map of Steuben County and of the State of Indiana. From the district schools only, a premium was offered for the best business letter, best friendship letter, diacritical marking of familiar sentences, analysis of problems, and a variety of other specimens of school work, all of which elicited a competition from the high and district schools and from individual pupils which was creditable in the highest degree to the schools and the scholarly attainments of the pupils. A large space in floral hall was assigned for these exhibits, and over two thousand specimens were placed on exhibition, which justly received the warmest commendation from the thousands who inspected the work. On Wednesday, the school day of the fair, the rain prevented as large an attendance of scholars as was anticipated; notwithstanding this, the crowd was larger and the gate receipts larger than the corresponding day of any previous year.

The large number of small lakes of pure, clear water scattered over the county, as shown by a map of the county published in the last year's report, continues to attract the attention of our citizens in propagating new varieties of fish, as well as enforcing the law for the protection of those already in the lakes, and for this purpose some half dozen fishing and boating clubs have been organized. These associations have erected on the margins of the lakes comfortable buildings for the protection of their boats and fishing apparatus, with comfortable living rooms, where they gather for a week's sport and enjoyment each season, inviting their friends to the social jubilee.

The wool interests of the county, notwithstanding the depression in prices, continues to attract a good share of attention, and the exhibits at the fair were commendable in the highest degree. Among the coarse wools the Leicestershire and

Southdowns take the lead, and for the double purpose of wool and mutton would seem to excel all others. One of our breeders exhibited specimens weighing over two hundred pounds. While the Merino, with his compact, fine wool, yields a fleece weighing thirty-five pounds, the question remains an open one as to the profits of the coarse and fine wool sheep.

The high, rolling, well-drained lands of the county are highly favorable to the sheep industry, no contagious diseases having ever decimated our floocks. The foot-rot having been in a few instances imported, was speedily stamped out by our flock-masters. The unfavorable legislation of Congress and by our State Legislatures in passing a law for the better protection of dogs (misnamed for the protection of sheep), has in nowise disheartened the wool growers.

The returns made by the assessors for the five years, up to and including the year 1884, show a steady increase each year (except for 1883, when there was a slight falling off in the number returned), from 32,879, in 1880, to 50,347, in 1884, and the amount of wool clipped during the same years showing a corresponding increase. The same returns show that the county of Steuben leads all the counties in the State in the production of wool by over thirty thousand pounds, Lagrange falling about that amount behind.

The show of fine horses was larger than in any previous year, the Norman horses taking the lead for farming purposes, followed by Clydesdales and American draft.

In the cattle department the Shorthorns predominate, very few entries being made in other classes. The Jerseys, however, are gaining ground, and for neatness and economy are preferable to all others in the cities and towns.

The Poland-China hogs are raised more than any other breed in this section of the country.

A rigid enforcement of the drainage laws of the State by the people of our county has made the business of the doctor dull in the extreme, and no county in the State enjoys a better percentage of good health than do the people of this county.

Three tile yards are now in active operation, with arrangements almost complete for the fourth, and those now in operation are supplying our farmers with most excellent tile, of which they used, last year, at least one-third more than in any previous year. By industry and economy our farmers are now in quite easy circumstances, and are turning their attention to the improvement of the methods of successful farming.

Our agricultural hall was a perfect picture last year. Never before was such a fine variety of apples, potatoes and cereal products placed on exhibition. Our soil being of a sandy nature, is peculiarly adapted to the raising of potatoes, which come out of the ground as smooth and clean as if they had been washed.

On the whole our fair was a complete success. We paid over sixteen hundred dollars in premiums; paid all the expenses of the fair; built a new barn on the grounds, and now have a surplus of nine hundred and fifty dollars to make additional improvements.

E. A. BRATTON,
Secretary.

SULLIVAN COUNTY.

The Sullivan County Agricultural Society held its first annual fair under the present management, September 8 to 12, inclusive. For a number of years there have been no fairs held in the county, owing partly to the manner former fairs have been conducted. To increase the receipts, gambling was permitted upon the grounds during the fair, and one year a cheap quality of washed or plated silver-ware was offered as a premium in certain classes, of which some of the officers were handsomely supplied with a much better article. One or two years the premiums were not paid in full. In attempting a new organization all of these objections had to be met and overcome in order to satisfy the better class of our people that a fair could and would be carried on in a legitimate and respectable manner.

The present society was organized on the stock plan, and two hundred and eighty-eight shares of stock, ten dollars each, were soon subscribed for. From the money thus raised the Coffman Driving Park was rented for a term of ten years on very favorable conditions, the grounds put in order, buildings erected and other preparations made for holding a fair. Notwithstanding the short time we had to get out a premium list, and convince the people that an agricultural fair would really be held for the purpose of advancing the productive interests of the county, the fair was a grand success, satisfactory to exhibitors and visitors, as well as to the stockholders. The receipts more than paid the premiums in full and a balance of about two hundred dollars was applied upon a small indebtedness for building stalls, etc., which practically puts the society out of debt. The grounds are favorably located, just out of the corporate limits of Sullivan and near the E. & T. H. Railroad depot. The attendance each day, after the first, far exceeded the expectations of any one. The exhibits were very creditable all through, and in some classes the best ever seen in the county. The show of horses was very fine, some of them having taken premiums at the State Fair. The show of hogs and sheep was not so good. Any number of our best farmers expressed themselves as delighted with the way the fair was conducted, and in another year would not be found lagging in an enterprise so vital to the interests of the county.

The wheat crop in this county for the past three years has nearly been a failure. Hog cholera has been prevalent for two years past. Corn crop this year the best ever known in the county. Hay is abundant and vegetables of all kinds are as fine as could be wished. A fair crop of apples of excellent quality.

Our farmers are devoting attention to a better grade of stock, especially horses and cattle. The indications are so good at the present time that the society feels justified in offering larger premiums for the next fair and feel sanguine in being able to report one of the very best fairs ever held in the State.

U. COULSON,
Secretary.

TIPPECANOE COUNTY.

The nineteenth annual exhibition of the Tippecanoe County Agricultural Association was held on the grounds of the Association from August 31 to September 4. It was not a conspicuous success, and yet, considering the weather, and the adverse feeling of certain classes of our people, it was a fairly successful meeting. For years this county has been cursed with factions. Whatever one favors the other opposes, whether right or wrong. The line between these factions is drawn upon the temperance question. For many years, in fact, every year since the fair was first held upon the present grounds of the Association, a large booth has been rented for the sale of beer, and the rent received from this source has been no inconsiderable part of the annual receipts of the Association. The Board of Directors having control of our affairs, interpreting section 2100 of the Revised Statutes of 1881 as prohibiting the sale of spiritous or malt liquors on the fair grounds, after a careful discussion of the matter, decided not to allow liquers of any kind sold upon the grounds. This action was the signal for an active hostility on the part of the liquor sellers, and through their efforts a large portion of this class of the community were conspicuously absent, and while the receipts of the fair were somewhat reduced in this respect, the loss was more than compensated by the entire absence of all rowdyism and pilfering.

There were a greater number of entries and a finer display in the the horse department than ever before. The exhibit of cattle was greatly inferior in point of numbers, but for excellence of the individual animals shown could hardly be surpassed. Many intended exhibitors were deterred from bringing their herds for fear of exposure to contagious diseases. There was a full exhibit of sheep and hogs, among them many of the finest specimens ever shown in the county. In floral hall the exhibition of ladies' work, fine arts, dairy products and school work was all that could be desired. In this connection we wish to express the obligation of the Society to the faculty of Purdue University for their admirable display of destructive insects and work from the art department. The labor to properly arrange their specimens was great, and no exhibit on the ground received more attention.

The almost total failure of the fruit crop in this vicinity occasioned a very meager exhibit in the horticultural department.

The show of grains, vegetables and farm products was generally good, and attracted much attention.

Our annual fairs have had the effect to stimulate the farmers to greater efforts to produce the best, and the condition of the agricultural community is constantly improving. The better understanding of the methods adapted to produce the best results is having a telling effect upon the quantity and quality of the products of the soil. The great increase in tile, or under-draining, has added to the productive area, and has largely increased the productive capacity of the county. Many acres of land formerly too wet to produce even grass are now the richest and most valuable of our farming lands.

The estimated crop of corn is, in round numbers, 3,000,000 bushels, the largest of any county in the State.

Wheat was a failure, the acreage being somewhat less than usual, and the yield only about thirty-five per cent. of an average. Other crops were fair. The fall-sown wheat never looked better at this season.

J. M. Dresser,
Secretary.

TIPTON COUNTY.

The seventh annual meeting of the Tipton County Fair Association was held on the grounds, in Tipton, September 21 to 25. The weather was favorable, and the fair was a great success. We were required to add new stalls and pens, the entries in live stock so far exceeding in number those of any previous year.

The exhibition of horses, in particular, far excelled any previous display. Our classes for draft, light-harness and general-purpose horses were each about equally well represented. The opinion expressed by all observers was that Tipton County breeds and shows first-rate horses in all classes.

Our speed rings were fairly well represented, and gave general satisfaction. In this connection I deem it but fair to say that in my opinion, based upon both experience and observation, good speed rings are necessary to the success of our fair. There must be some amusement coupled with our shows of stock and general farm products to relieve the monotony, and what more innocent amusement can be adopted.

Agricultural and horticultural products made a better showing than for several years past, and it is observed that the general supply of such products in this county much exceeds, on an average, that of several previous years.

Previous to the last fair the company made some improvements in the floral hall and amphitheater, so that they were more convenient than ever before. The display in the ladies' department was grand, and beyond the power of the Secretary to describe, or to give any adequate idea of the many choice and beautiful specimens of handiwork placed on exhibition. This display was made more attractive by the skill displayed by the lady superintendent and her assistants in the arrangement of the articles on exhibition, and much credit is due them for the interest they have taken to make our fair a success.

Our farmers are beginning to take a deep interest in our exhibitions, vieing with each other as to who can best cultivate his grounds and improve his stock.

Our soil is susceptible of a high state of cultivation, and all crops grown in the State can be grown. Our farmers are determined not to be surpassed by any county in the State for drainage, which has made land that has been worthless for agricultural purposes the best producing land in the county.

In the matter of free gravel roads there is a deep interest taken, quite a number are under headway at this time, and some of them near completion.

J. A. Gleason,
Secretary.

VIGO COUNTY.

The Vigo Agricultural Society is enabled to report increased success during the past year and improved prospects for 1886. The fair held this year surpassed, in many respects, any in the previous history of the society, and, by its satisfactory results, gives assurance of successful fairs in the future. The management of the grounds and exhibits has been such as to overcome difficulties arising from financial embarrassment and uncertainty, and to establish permanently an ambitious and energetic policy for providing hereafter great agricultural and live stock displays. The circuit system, by uniting a number of Western counties in harmonious co-operation and preventing interference and rivalry at the expense of one another, has contributed much to our success and no doubt to that of the societies in the co-operating counties. It is no longer an experiment but has proved to be necessary and useful in increasing the interest and profits of the fairs throughout the circuit.

The last Vigo County Fair showed increased exhibits in every department. The entries of live stock exceeded in number and quality those of any previous year, including many valuable animals from home exhibitors, showing the development of our own stock, and also splendid herds from abroad. Special efforts were made to raise liberal purses for this department, resulting in making it the most attractive feature of the fair.

The fine art, kitchen, dairy, and miscellaneous departments contained a remarkable outpouring of articles which had a great interest for a very large class of visitors. There was the same increase observed in the display of horses, and it has become necessary to provide many more stalls. The mechanical department was enlarged and will receive more attention next year. A commodious power hall, long talked of, will probably be built before the next fair, and a fine club-house will be built by a stock company

An estimate of money expended by the society since it first leased its grounds in 1867, shows a total of $26,000 for buildings, improvements and repairs. Of this amount $3,500 is still a debt, but it is very probable that the next report will record its extinction.

The financial success and liberal spirit of the last fair followed a season of great depression, yet an impartial view of the condition of the county is reassuring. The wheat crop, which was a failure in 1884, was not much over one-quarter of a crop in 1885, and the reduced acreage of the last year will show a reduction of perhaps one-third for the next. The seven mills of Terre Haute, which have a daily capacity of 3,100 barrels of flour, have drawn very scanty supplies of wheat from this vicinity. The oat crop was very large. In previous years the supply and price of oats forbade shipping, but this year shippers have bought and shipped freely. The acreage in hay is claimed to have been one-third larger, and the yield per acre much larger than in previous years, but so many have bought hay-presses and engaged in baling and shipping that a lively competing demand has caused an advance in prices, so that, in spite of the increased supply, prices are higher to-day than a year ago.

The diminished wheat acreage was offset by the increased corn planting and its luxuriant yield, which was probably greater than even that of last year, but the quality has proved to be much inferior.

There are two hominy mills in Terre Haute, which, with the Fairbanks distillery, have a yearly capacity of 2,500,000 bushels, far more than the county can produce. Nearly half the acreage is in white corn, for which the hominy mills create a firm local demand at prices ranging from two to five cents a bushel above mixed corn. This excess in price and the distribution of 6,000 to 7,000 bushels of selected seed corn in the season by the Hudnut mill and a liberal policy by this mill in giving premiums through this society for choice samples, has increased largely and rapidly the cultivation of white corn, which in Indiana reaches a perfection for certain manufactures unknown elsewhere.

There is an increased interest in fine stock and many fine herds of cattle are now owned, and in a small way a number are introducing improved strains, raising the general average of the stock in the county. The society in contributing to this result has done good work. Its policy will be to promote not this alone but all the interests which can be represented at a live fair, and by their diversity aid the welfare of every class.

CHAS. C. OAKEY,
Secretary.

WABASH COUNTY.

The Wabash County Agricultural Society held its thirty third annual exhibition on its grounds, on the limits of the city of Wabash, from September 8 to 12. The weather during a portion of the time was very bad, raining about half of the time, making it very uncomfortable and cutting off the attendance nearly one-third. Notwithstanding this and the scant attendance, our receipts were sufficient to pay premiums in full, as we have always done.

The exhibition was fully up to former years; the display in all the departments was good, and in many instances excelled former exhibitions.

The show of horses with us is always good; they as usual took the lead, being represented by Normans, Belgians, Clydesdales and Blue Bulls. Our horsemen devote more attention to raising heavy draft horses than others, on account of their market value.

The entries in the cattle department were ahead of former years.

The hog and sheep departments were well filled with the best breeds.

The poultry show was larger than for some years, all of the best varieties being shown.

Of farm and garden products there was a large and very fine exhibit.

The show of fruit was fair, with not quite as large samples shown as usual, the crop being almost a failure with us this year.

The art hall was attractive, being literally packed with specimens of women's handiwork and displays of art.

The condition of agriculture in this county will compare favorably with any county in the State, the diversity of our soil affording opportunities for a diversity of cultivation, grain growing predominating.

There has been an immense amount of ditching done and tile put down in this county in the last few years.

We have six gravel roads centering in the city of Wabash, radiating to all parts of our county. Gravel in abundance and an inexhaustible supply of stone for building purposes.

FRED. J. SNAVELLY,
Secretary.

WARREN COUNTY.

The twelfth annual fair of our Agricultural Association was held at West Lebanon, September 8 to 12, inclusive. Gloomy weather prevailed, resulting in only an average attendance.

The show of Norman and English draft horses was the finest ever on the grounds, while general-purpose and light-harness horses were well represented.

Our cattle premiums being low, there were only thirty entries made. Quality good.

The swine and sheep departments were not as full as in some years previous, but were a fair average.

The mechanical aud agricultural departments were fairly represented.

As usual, the merchants and ladies filled floral hall with the handiwork of Warren and Fountain counties, and, in fact, it is only a repetition to say that this hall was the center of attraction.

There was one feature worthy of special mention. The ladies of the W. C. T. U. have run the dining halls the past two fairs with great success, giving good satisfaction to the general public, and adding to their own financial prosperity.

The wheat crop of 1885 was a failure, but the crop planted last autumn went into winter quarters in fine condition, and, barring accidents, promises well for the ensuing year.

Corn may be termed a light average, the cool weather in August and September checking the growth. The area fully up to the average.

The hay crop was one-third below an average; quality good. Pasture, abundant. Stock in fine condition, and no contagious diseases.

GEORGE T. BELL,
Secretary.

WARRICK COUNTY.

The twenty-seventh annual fair of the Society was held on the grounds, October 6th to 10th. The display of exhibits was thought to exceed any ever shown here, being especially large in the ladies' department, and aggregating two thousand entries.

The gate receipts were lamentably small, and we were compelled to draw on the reserve fund for a deficiency of about $290.

The soldiers' reunion held here a few weeks prior to the fair, and also an unfortunate selection of dates, materially lessened our attendance, accounting for our decreased receipts. Tobacco cutting and wheat sowing demanding the attention of our farmers at the time reduced the number of our substantial patrons.

As our thirty-year lease expires next year, we are making preparation for a new organization, and committees have been appointed to perfect a set of by-laws, select grounds, and perform other preliminary work necessary to the formation of a stock company.

There is a growing determination among our citizens that the annual meetings shall continue, notwithstanding the indifference and discouragements offered by a certain class of "croakers."

A decided improvement in all kinds of live stock is directly traceable to our annual meetings, and our liberal premiums attract exhibitors from a distance who bring the best in their several lines to compete against our home productions.

Our thoroughbred stock consists of Norman horses, Shorthorn and Jersey cattle, Berkshire and Poland China hogs, Cotswold, Liecester and Southdown sheep.

As an agricultural county ours stands very near the head of the list. All kinds of grain may be grown, and few, if any, of our sister counties can boast of larger yields.

In tobacco we lead the State. Cattle and grain stand third and fourth respectively. Our staples are tobacco, wheat, corn, oats, clover and potatoes. Other crops, as sorghum, beans, fruits, etc., are grown, mainly for home consumption.

The county is underlaid with fine beds of coal in seemingly inexhaustible quantities. Thousands of acres are covered with forests of white oak, poplar, gum, maple, ash, and other woods.

The surface is diversified, being about equally divided between the rolling and level lands, and in the hilly district in the southern part of the county may be found the finest land in Southern Indiana—a soil that has been in cultivation for fifty years without the use of fertilizers. This part of the county is mostly in the hands of large land owners, and sells at $40 to $50 per acre, although excellent land may be bought nearer Boonville at $15, and good, well-improved farms at $30 and less.

Boonville is the shipping point and market; is supported by a splendid farming country, and is making rapid improvement, the buildings erected here in the two last seasons costing near $100,000. The cheap coal and lumber are favorable advantages, indicating that we are to become, in the near future, a manufacturing as well as an agricultural people.

The public schools employ upwards of one hundred and forty teachers, and we take pride in saying our school system is unexcelled.

WM. L. BARKER,
Secretary.

WASHINGTON COUNTY.

The Washington County Agricultural Association held its fifth annual fair at Salem, September 14 to 18, under favorable circumstances, the weather being bright and pleasant, with our attendance better than ever before.

Our speed rings, as usual, were very attractive and exciting, perhaps more so than at any previous fair; our track being greatly improved and securely fenced on the inside, so that all starters had to make a full mile. Our exhibition of stock of all kinds was better than ever before. We paid the expenses of the fair and $200 on our funded debt, leaving a nice sum for improvements. The show of jacks and mules was as good as usual, while our light harness, draft and general purpose rings of horses were excellent in every particular. I doubt if these classes were excelled on a county fair ground in the State. Our exhibition of hogs was superior both in number and quality, and indicated skill in breeding. Our cattle show, in all classes, was much better than we have ever had. The Shorthorns and Herefords locked horns, earnestly contending for superiority of their breeds; but, after awards were made and both bore off a fair share of the honors, all concerned seemed satisfied. Our show of sheep of all grades was also an improvement on former seasons, and so on through the list. The whole demonstrating to the most skeptical the great improvement in the last five years in all kinds of stock in this section. some putting the percentage of improvement as high as 33⅓. While I would not say that part of this is not attributable to natural development and tendency to improve, I do claim that four-fifths of it is directly or indirectly traceable to our fair organization. Our worst croakers are compelled to admit that the association has accomplished great benefits for the community, and seem to be convinced that it is not only necessary, but that it is here to stay. The discussion among farmers, and their interchange of experiences in the use of fertilizers and the percentage of profits realized therefrom, has led to the use of, perhaps, double the quantity in the last three years, and the same may be truly said of tiling. We are no longer importers, but are now exporters, of wheat, and while fertilizers are not much used in our corn crops yet, a little agitation and experience will soon make their use general in that crop on thin land. The fact is, we have got pretty fair average soil down here in Southern Indiana, if we will only devote energy, industry and intelligence to the development of our natural resources. Our roads are somewhat improved over the past, but there is still more to do than has been done to make this part of the country enjoyable.

In making this, my last, report as Secretary, I can not forbear mentioning the loss of our ex-Vice President, Dawson Lyon, one of our first and a continuous officer in the association from its organization—a broad and liberal-spirited gentleman, whose influence was always exercised for the benefit of the association, and in it, as in the business community, his wise counsels were sought, freely given and always heeded. His death occurred during our fair.

FRED. L. PROW,
Secretary.

WAYNE COUNTY.

The progress of agriculture in Wayne County for the year 1885 has been fully up to that of any previous year. The failure of the wheat crop, which was general throughout the county, was not on account of any neglect in the preparation of the soil or the manner of putting in the crop, but from other causes, over which our farmers could have but little control. The shortage in the wheat crop was fully made up by an abundant yield of corn and oats. It is true the season was favorable for corn, yet the large crop may be accounted for in part by the timely and careful selection of good seed by a large majority of our farmers. The lessons of the past few years have taught them that a large amount of labor can be saved and an increase of the crop insured by planting good seed. It would be within the bounds of truth to say that more fields were sown in clover last year in this county, and more stable and barnyard manure applied to the soil, than for any previous year. Commercial fertilizers were also used by quite a number of farmers. There has also been great improvement in stock. The Poland China breed of hogs is now raised by almost every man who raises hogs. The herds of Shorthorn and Jersey cattle are multiplying in number and value. The Norman and Clydesdale horses brought to this county from France by Col. J. A. Bridgeland, and crossed with the native breeds, have produced a stock of horses that are well adapted for farm work and general purposes. So with other kinds of stock and poultry the improvement has been general and very satisfactory.

During the year just passed more underdraining was done in some neighborhoods in this county than in any previous year. Not only swamps and wet land were drained, but clay land has been greatly improved in this way. Experience and observation have taught farmers that money spent in draining their lands, when not naturally underdrained, returns a per cent. equal, if not greater, than that of bank stock. Quite a number of farmers have rendered their fields more productive, and infinitely more pleasant to cultivate, by the liberal use of dynamite and hercules powder in blowing up the stumps and stones that encumbered the ground. One farmer in the neighborhood of the writer spent two hundred dollars in clearing the stumps from a field of thirteen acres, where the timber had recently been cut off. We believe a field cleared of obstacles that take up so much ground and are in the way of the plow, the reaper and the mower, will soon pay the cost of the labor and the dynamite necessary for their removal.

There have been valuable improvements made in agricultural implements during the past year by our own mechanics and manufacturers. The most important of these is in the wheat drill and the check-rowers for corn. A most valuable improvement has also been made in the fence machine for weaving slats by wires into a neat and economical fence.

The meetings of our society during the past year have all been largely attended, the exhibits have embraced fine specimens of almost every article raised by its members, and the papers read before the society during the year, have been of a high order, and reflected much credit on the ability of the writers.

JOS. C. RATLIFF,
Secretary.

WHITLEY COUNTY.

Our society held its twelfth annual exhibition on the association's grounds at Columbia City, September 29 to October 2. In 1884 we held our fair one week earlier, and on each occasion, the last, and what is usually the best day for a large attendance, we had heavy and continuous rain. In 1884 we built a fine art and fruit hall that cost six hundred dollars, for which we expected to pay from receipts; but for the reason above stated the fair paid current expenses, and we carried the six hundred dollar debt over, and again this year our fair paid expenses and two hundred dollars of the debt, leaving four hundred dollars to carry over till next year. Our people appreciate the advantages of these annual exhibits, and if no unforseen events transpire, will patronize them so that in addition to the material and social utility resulting therefrom, will, in the future, pay curren expenses and keep the grounds in repair.

In the horse department the exhibits were not up to last year, neither were they in the cattle department, but in sheep and swine exceeded those of last year, and in the poultry department more than doubled any former year.

Agricultural hall was well filled with the various grains and vegetables grown in this latitude, and of a quality hardly to have been expected, considering the lat spring and general low temperature of the season.

In the fine art and fruit hall was the greatest attraction, especially for the ladies every bit of space being occupied by exhibits, reflecting honor and efficiency on those by whom they were produced.

On the open space within the speed ring was an engine propelling various kind of agricultural machinery, notably self-binders.

In my report for 1883 I made a statement of the general class of farming, a practiced by our farmers, and on that question I have nothing farther to offer, bu will say that with quality of land and class of farming, equal to that of any average county in the State, it seems strange that the number of mortgages on farm property should be increasing and bank accounts shortening up, as I am informed is the case in this county. Perhaps the cause lies in the vast amount of drainage that is constantly being done and the rapid displacement of old by new buildings, together with the very large amount of new and improved farm machinery that is being bought.

In horses, the Norman, Clydesdale and English draft are preferred by our farmers, but speed horses are also in demand, especially good trotters.

In cattle, Shorthorns take the lead, but notwithstanding our society has dropped the Jerseys from our premium list, they are sought for and are increasing in numbers because of their dairy qualities.

In swine, Poland Chinas and Berkshires lead, but Jersey Reds, McGees and Chester Whites are also bred.

In sheep, mixed breeds are preferred, composed of Spanish Merino with some long wooled mutton breed or Southdown.

In poultry, all catalogued breeds are raised, but as eggs are the principal thing sought, the best layers are most numerous.

All of our principal farmers are favorable to the present stock law, so also are most of our town people.

Red clover and timothy are the principal grasses—clover mainly as a fertilizer and for its seed, and timothy for hay and grazing.

Our grass crop, for the season, was a good one and well saved.

Wheat crop good and of excellent quality.

Oats, large crop and good quality.

Corn, large crop, but of poor quality.

Apples, medium crop and fair quality, but orchards rapidly decaying.

Peaches, trees all dead.

Small fruits, medium crop, fair quality.

There is considerable objection to the present dog law, as amended in 1885, because it takes the money of one township to pay the debts of another.

Statistical reports are much sought for and considered valuable.

M. D. Garrison,
President.

ACTON DISTRICT.

Our association held its third annual fair September 7 to 11, and it seemed that the elements were bound to blast our hopes entirely, as for the third consecutive year we have had rain.

Notwithstanding, all departments were well filled, and our fair was a success, though our gate receipts were small. We had a fine show of horses which excited the admiration of all. In the cattle department were represented the Shorthorn, Holstein and Jersey breeds. The lively interest taken, shows a marked improvement in this branch of farming.

In the sheep and hog departments we had a fine display. The poultry show was large and exceedingly fine. The farm and garden products shown would have been a credit to any community, and spoke well for the productiveness of our soil. The good display of fruit surprised many who thought the day of fruit-growing past. Canned fruits and jellies, preserves and cake, bread, fine needle work, flowers, paintings and drawings were there in abundance to show how necessary to our comfort and happiness are the ladies. There was also a good supply of farm machinery.

I can not estimate the good that has been done our community by these exhibitions. We are all cultivating a desire to excel, and the effect can be seen upon almost every farm in the cutivation of crops, improvement in live stock and beautifying our homes. We cultivate wheat, corn and potatoes principally. The wheat crop this year was below the average, although some of our farmers threshed from 20 to 30 bushels per acre and some even exceded that. The corn crop was large and fine and was cribbed in good condition. Hay not so large a crop as last year. As to stock, our farmers are looking more to cattle and horses. Hogs are in disrepute on account of the ravages of hog cholera, and sheep seem to be something of the past.

An era of progress has stepped in with our farmers in the matter of improving farms and increasing their productiveness. Duck ponds are turned into fertile fields, the old fence rows grubbed out, improved machinery employed, and, truly, our land is being made to "blossom as the rose."

Tile drainage is being extended to our clay uplands with surprisingly good effects. Clover as a fertilizer is extensively used while as a hog and seed crop it is valuable.

The fence question is an all absorbing one—how to make the cheapest, strongest and most durable fence for the farm. Few rails are used by our farmers however well they may be supplied with timber. Some use the common plank fence, others plank and wire, some wire alone, but the wire fence has proven dangerous to stock. The picket wire, though not much used yet, seems to be the coming fence. Our timbered lands are fast changing into cultivated fields.

Our educational advantages are good. We are supplied with commodious and well patronized school houses and churches.

Upon the whole, as a community we are growing financially, socially and religiously. J. E. McGaughy,

President.

BRIDGETON UNION.

The Bridgeton Union Agricultural Society, composed of the counties of Parke, Putnam, Vigo and Clay, held their twenty-fourth annual fair at Bridgeton, Parke County, from August 24 to 29. The weather for the three days was very unfavorable, raining most of the time and the prospect was anything but favorable; yet, notwithstanding all the drawbacks, we had a good fair.

The show in all departments was good. The horse department was well represented by all of the different classes, especially in heavy draft. There appears to be a larger demand for this class than any other at present.

The show of Shorthorn cattle was reasonably good, the exhibitors in this department being farmers in the district. Our grounds being seven miles from any railroad, it is a difficult matter for the fine herds to reach us.

The hog and sheep departments were well represented, Poland China and Berkshire predominating in hogs. In sheep, Merinos, Cotswolds, Shropshires and Southdowns were shown.

Agricultural implements and the mechanical department were well represented.

Agricultural and vegetable halls were well filled with as fine samples as could be seen at any fair.

In the woman's department the entries were not as large as at some of our previous fairs, but what was lacking in numbers was more than made up in the superiority of the articles on exhibition.

The best of order prevailed during the entire week of the fair.

The agricultural, mechanical and mining interests of the district are in good shape. They are advancing and keeping fully up with the times. The farmers are keeping themselves well posted in everything that pertains to their avocation, and supplying themselves with all the improved agricultural implements, and are introducing all new varieties of seed that tend to increase the average yield.

The subject of improving lands that have partially run down is receiving considerable attention, as it properly should, both in the way of tile draining and manures of various kinds.

There has been a great improvement in the last few years in the way of introducing all the improved breeds of thoroughbred stock. Farmers have learned that it does not pay to keep an inferior article.

The agricultural products of the district consist of corn, wheat, oats, rye, timothy, clover, buckwheat, sorghum and potatoes.

The first in importance is the corn crop. There was a large acreage, with probably more than the average number of buushels secured. The quality of the crop was not as good as for some years, considerable soft and mouldy corn being gathered.

The wheat crop was short in acreage 25 per cent. and on an average at least 25 per cent. of that sown was winter killed.

The oat crop was the largest in acreage for years, if not the largest ever sown in the district. The average per acre was very large, the grain good and saved in good condition.

Timothy was about an average in acreage, but not an average in quality and quantity. After harvest a great many meadows were nearly overrun with weeds of various kinds. To what extent it will damage them is hard to tell as yet.

The clover crop is one of the most important that the farmer can raise, taking all the benefits to be derived from it into consideration. The acreage was an average, and is increasing very fast. The crop was hardly an average.

There is some millet raised. The crop was good.

Of sorghum, about the usual acreage was planted; the crop generally good.

There is not much rye sown, as it has not been considered a very profitable crop. There will probably be an increased acreage sown in order to furnish straw for the large paper mill established at Ellsworth, in Vigo County.

There is some buckwheat raised for seed and green manuring, about an average per acre.

The potato, in some portions of the district, is getting to be quite an important crop. There was a large acreage, and the early varieties were good.

The condition of horticulture is on the decline so far as apples and peaches are concerned. The old orchards are decaying very fast. Peach trees are about all dead, and there is not much encouragement to plant new orchards. There was quite an amount of small fruits raised. The melon crop was perhaps as large an acreage as has ever been put out. The average per acre was large, and as fine in quality as ever grown.

The condition of stock is generally good. There has been some so-called hog cholera, but not so bad as in some other years. The number of stock is on the increase, with the exception of sheep. The low price of wool and the fear of dogs have had a very bad effect on the sheep interests.

As regards the dog laws we have on our statutes, we would be as well off without any; yet it is probably as good as the farmers deserve, so long as they send lawyers and doctors to the Legislature to make their laws.

The mining and manufacturing interests of the district are in good shape. There are about fifty shafts in operation, mining more coal than all the balance of the State combined. Clay County has a large area of the best block coal. Vigo has a six-foot vein of bituminous, Park has the semi-block and bituminous, and Putnam has an inexhaustible supply of the best of limestone suitable for building purposes and lime. There is one blast furnace running on an average of ten months in the year, making an average of thirty tons of pig iron per day, which is used by the rolling mill adjoining the furnace. There are several rolling mills and two nail mills, one of the largest distilleries in the world, and two hominy mills, usuing thousands of bushels of corn annually.

DEMPSEY SEYBOLD,
Secretary.

EASTERN INDIANA.

The third annual fair of this association was held on the grounds of the society at Kendallville, from October 5 to 9. The weather, up to Thursday morning, was wet and unfavorable, retarding the work of making the entries and no doubt preventing many at a distance from making any entries at all. Notwithstanding this, the exhibition was large and excellent in all departments. The horse department particularly was full to overflowing and the stock of the very best quality. The exhibition of imported horses won the admiration of all stock raisers and certainly was never excelled in this part of the State.

The cattle, sheep and swine show was very satisfactory as to the quality of stock and the amount on exhibition. The poultry display was good, though not as large as desired. Floral hall, under the management of an able superintendent, assisted by ten ladies, contained a vast number of exhibits, which were tastily arranged and won many complimentary notices from visitors. Agricultural hall delighted visitors with its rich productions of the soil. In the machinery department the visitor also had a rich treat. A line shaft 140 feet in length was well filled with self-binders, reapers, mowers and other machinery intended for farm use. This was a place where all, particularly the practical farmer, delighted to linger.

The speed department also received proper attention. Hotly contested trials of speed took place each afternoon. Some of these were particularly exciting and full of interest. The grand parade of stock on the track Friday forenoon was a very interesting and pleasing feature.

The fair, taken as a whole, was a marked success, notwithstanding the very unfavorable aspect of the weather for the first three days. The fact that the people turned out in such weather to assist and encourage the enterprese, demonstrated to the management that their work is appreciated, and will stimulate them to greater effort in the future. The receipts of the fair were about $5,000, which enabled the

association to pay all premiums in full, to liquidate a debt of several hundred dollars and to pay a dividend of six per cent. to stockholders. The association is now out of debt, and to all appearances on the road to prosperity. No games of chance nor gambling were allowed on the grounds. No intoxicating liquors were sold and no drunkenness was observed. J. S. CONLOGUE,
Secretary.

EDINBURG UNION.

Our annual fair opened this year Tuesday, August 18. In point of entries it was up to fairs of previous years; in attendance it was not so good, owing to several causes beyond the control of the management.

Gambling devices of every description were excluded from the grounds, cutting our receipts short about six hundred dollars, together with light attendance the Society could not pay premiums in full. There will be an effort next year to wake up this Society, and make it one of the best in Southern Indiana.

Our wheat crop was a failure and corn light, with plenty of potatoes and other vegetables. Fruit was not an entire failure in this county, but was cut short fully one-half, and will be small for a number of years on account of the trees being so badly winter killed. The trees that were not entirely killed seemed to be badly damaged and are still dying. A great many new orchards are being planted, but the winters seem to kill a large number of the young trees each year.

J. A. THOMPSON, JR.,
Secretary.

FOUNTAIN, WARREN AND VERMILLION.

The twenty-sixth annual fair of the Fountain, Warren and Vermillion Agricultural Association was held at Covington, September 22d to 25th, and was the largest and most successful ever held here. Notwithstanding the fact that we were compelled to abandon the "family badge," against the wishes of the majority of the farmers, the adoption of the twenty-five cent system worked admirably, and swelled our treasury handsomely, the receipts aggregating a little over $3,000.

The various displays, agricultural, horticultural, floral and fine art were magnificent, while the exhibition of hogs and sheep far exceeded anything ever witnessed in this locality.

We had some splendid racing, there being seven fine horses here from Kentucky.

Our system of farming is thorough, and applied to the rich soil of this section yields wonderful results. However, our wheat crop this season was very light, but our crops of corn, oats and hay were abundant, so that, upon the whole, our granaries are well filled. O. P. LEWIS,
Secretary.

HENRY, MADISON AND DELAWARE.

The Henry, Madison and Delaware Agricultural Society held its annual fair August 18 to 21, 1885, on their grounds adjoining the town of Middletown. The grounds are well shaded, good buildings, excellent stalls and pens, plenty of good water and a half-mile race course that is excelled by but few in the State. The society own the ground and buildings, and have no indebtedness, but instead a small surplus. Our society has never failed to pay its premiums in full, and has gradually increased them from year to year. The premiums offered will compare favorably with other societies. Our last fair was considered a grand success. The weather was fine, and the entries were in excess of any previous year. The horse department was well represented in all the classes, especially the show of draft horses, which included very choice selections of Clydesdales and Normans. The speed department was well represented, and the races were all filled. Good time was made by horses that have as good records as any in the State. The show of cattle was superior to that of any former year, consisting entirely of Shorthorns. The hog department was well filled with fine specimens. In the sheep department there was a greater number shown and a better quality than we have ever had before at our fair. Vegetable hall was filled with choice fruit, grain and vegetables. Floral hall was crowded to its full capacity with plants, ladies' fancy articles, show of wares and merchandise, and was highly appreciated, as demonstrated by the large crowd in the hall all the time during the fair. F. W. Cooper,

Secretary.

KNIGHTSTOWN UNION.

The Knightstown Union Agricultural Association, composed of Henry, Rush and Hancock counties, held its annual fair on their grounds the last week in August. The exhibition was a complete success. The various departments were filled to overflowing, so much so that additional space will be required in the future.

Although our wheat crop was almost a failure, our farming patrons responded with money, exhibits and their presence.

The horse department contained an increase over former years. This locality has been conspicuous for years for the number of fine horses sold.

The cattle ring was not so well represented as it should have been, although increased premiums have been offered from time to time, which seem to have the reverse of the desired effect. The show of sheep was of excellent quality, there being Long-wools and Downs on exhibition.

The hog department contained some of the best specimens of the pork family, having representations from breeders of which Indiana can speak with pride.

The agricultural department contained some excellent specimens. The other departments were all well arranged, and showed remarkable taste.

I can not close this report without especially referring to the ladies' department. Here were 574 entries, aside from the miscellaneous; the articles comprised both the useful and ornamental, for which our fairs are so eminently fitted for comparison. The hall is 30x60 feet, of good height and well lighted, and to say that it was filled would be only stating it slightly.

Our district is improving rapidly, both in production and healthfulness. Miles of drainage are being laid every year, which adds hundreds of acres of wet lands to the large per cent. now being tilled.

Live stock is being improved every year, and no other district in the State shows a more marked improvement.

Our society—with commodious halls for all exhibits of art (mechanical, agricultural, horticultural), and stalls for the accommodation of live stock, and a half-mile track as good as could be desired, located in a good farming community—will compare favorably with those of other associations.

W. E. JACKSON,
Secretary.

LAWRENCE DISTRICT.

The fifth annual exhibition of the above society was held September 16 to 19 inclusive.

As will be seen by our statistical report the stock exhibit was much larger and finer than ever before—several fine imported animals being shown. Other departments were full and better than an average in quality.

The Little Rock and Fort Smith R. R. made a very creditable display of the products of that wonderful region. Special attractions were bicycle performances, races, etc. Owing to hard times and weather, the attendance was not as large as usual.

Agriculture is steadily improving, although a bad wheat crop and general low prices tend to dishearten the farmer somewhat. However, much needed improvements in buildings, fences, drainage and roads have been accomplished since our last report. The fruit was only fair.

Many hogs have died with the cholera in this vicinity. Other stock has been healthy. The poultry crop is immense and prices are very low.

W. B. FLICK,
Secretary.

LOOGOOTEE DISTRICT.

The annual fair of our association was held on our grounds, east of Loogootee, September 8 to 12. The weather was very unfavorable until Friday, yet exhibitors continued to make entries, and the entire programme was carried out as usual. Friday morning brought us sunshine and an immense crowd of people. We paid our premiums in full and all expenses out of the receipts. Our community appeared more interested in our success this year than formerly, and all expressed themselves as satisfied with the result of our efforts. The exhibition in all departments was good, and in most above the usual standard. We excluded all gambling from the grounds this year, and brought out the best portion of our citizens, who heretofore lagged in interest on account of the way things were conducted on our grounds.

Wheat is the principal crop in this county, although the crop was a failure this year. A large acreage of wheat was sown this fall and at present writing it looks fine.

Our farmers are fast becoming better educated in their business, through the influence of agricultural papers and by attending fairs.

C. S. WARD,
Secretary.

MIAMI AND FULTON.

This District Agricultural Society held its third annual exhibition on its grounds from October 1 to 3. All things considered, our fair was a success, the display in each department being an improvement over last year.

The wheat crop of this section was good, making an average of sixteen bushels to the acre, and of good quality, selling at about eighty-five cents, bringing about $13 60 per acre, and costing on an average about $13 per acre to produce it, which leaves a very small average to the producer. The corn crop was fair, but not as good as was expected before husking. Average, perhaps, forty bushels. Oats were an average crop, but not much sown. The potato crop was good. Fruit was almost a failure, many orchards being nearly destroyed by last winter's severe cold weather. Stock is plenty, and wintering well. Our corn crop is being converted into pork and sold at about $3.40 per hundred. No cholera or other disease among our hogs as yet. There are more cattle fed here this winter than in previous years.

Mixed farming predominates in this section. Plank, wire and hedge fence is fast taking the place of the rail fence, made in the days when timber was no object. Large ditches are being opened, and by them a considerable amount of land heretofore worthless is being brought under cultivation, and, in many instances, is bringing our best crops. Considerable tile is being laid, and is considered a good investment. Our roads will compare favorably with some older sections. We have an abundance of timber yet, but at the present rate of consumption will not last many years.

Our shipping facilities are good, both East, West, North and South. Owing to the low price of produce, less improvement has been made in the way of good buildings than usual.

More good flouring mills are needed here, so our farmers could grind their wheat and sell the flour, feeding the bran and shorts on the farm, thus raising more stock and keeping up the fertility of the soil.

J. COFFING,
Secretary.

ST. JOSEPH COUNTY.

The fourth annual fair of the Northern Indiana and Southern Michigan Agricultural Society was held on their grounds, adjoining South Bend and Mishawaka, September 21 to 25 inclusive. Like all previous exhibitions of the society, all departments were well filled. In live stock and machinery departments the exhibits were especially fine. We find being in the fair circuit, with the Ohio State Fair; Tri-State, at Toledo; Michigan State Fair and our own State Fair, has a tendency to make the show in live stock, machinery and other departments compare favorably with other fairs in the circuit. We were favored with good weather, and the attendance from Michigan and other adjoining States was large. The condition of agriculture in our county, with the exception of corn (which was injured by the early frost), is fully up to the average.

C. G. Towle,
Secretary.

NORTHEASTERN INDIANA.

The fourteenth annual fair of our society was held near Waterloo, from September 28 to October 3 inclusive. Considering the unfavorable weather the first half of the week, the attendance was very good, the number of tickets sold exceeding those sold in 1884.

The entries were greater in number and variety than at any fair held on the grounds, and were well distributed in the different departments. In horses there was an increase of fifty entries over 1884. The cattle department also shows an increase over last year, and it is evident that our farmers are taking more interest in the improvement of stock each year. The entries of vegetables, fruits, and, in fact, all other departments, was an increase over former fairs. Exhibitors of machinery have not been able to show their goods to the best of advantage heretofore, but this season the association built a machinery hall, 30x80 feet, and it was filled to its utmost capacity with all kinds of machinery that interest farmers. We had no special attractions, such as balloon ascensions, etc., to attract visitors and swell the gate receipts, and we feel that the increased attendance is due to the interest the people take in our fair and the benefits to be derived therefrom. During the year there has been three and one-third acres of land added to our grounds. The cost of the land and permanent improvements added during the year amounts to $850, and our indebtedness has been increased about the same amouut. The wheat and oat crops were very good in quality; corn and clover-seed not up to the average, owing to the cool summer and rains during the fall.

J. A. Shull,
Secretary.

PLAINFIELD DISTRICT.

This society held its second annual fair on the old grounds near Danville, from September 1 to 4, inclusive. The weather resulted so unfavorably that we were unable to pay premiums, having gone to considerable expense in making needed improvements.

The display of stock was never excelled at our former fairs.

In cattle the Herefords took the lead.

The exhibit of agricultural products was fine, while fruit was not nearly so well represented, owing to the winter killed orchards in our section.

Our fair was a strictly moral show, no racing nor gambling being permitted on the grounds.

Wheat in this county was an average crop of fair quality. The growing crop is a little thin, although a large acreage was sown.

The oats crop was large.

Hay good, and much old stock carried over. Our meadows were damaged from some unknown cause, not drouth, and many entirely killed.

The corn matured very nicely and was cribbed in good condition. Dry rot has appeared in this section, which farmers claim was caused by grasshoppers eating the silk from the ear while young.

Hogs were only an average crop, owing to cholera appearing in some sections.

Sheep husbandry has been abandoned on account of the ravages of dogs and the low prices.

Many of our farmers are raising cattle more extensively than heretofore. Horses are also claiming their share of attention, and the breeding of this animal is being much improved.

The gravel road law is giving satisfaction, and "free road" is the watchword of our people.

Patent fencing is taking the place of rails.

A rigid game law for the protection of all useful birds, for a term of five years, would be a good amendment to our laws on this subject.

JAMES M. BARLOW,
Secretary.

PATRONS AND FARMERS.

The Patrons and Farmers Association of Newton County, held their third annual fair near Kentland, from August 25 to 29, inclusive.

The first day, children's day, was well attended. The society offered $50 in premiums, which was placed in the hands of the County Superintendent to buy suitable books for children taking ribbons in the school work display, which was a feature of our fair.

The display of horses was very fine and for quality and breeding was never equaled in this section of the State.

In cattle the show was good in all classes except Shorthorns, which were represented by but a single specimen. In hogs, sheep and poultry the show was good, especially of the first named animal.

Quite an interest is taken in bee culture here, and the display of honey could not have been surpassed.

The mechanical, agricultural, implement, domestic and floral exhibits were all above an average for our section.

We allow no gambling, racing nor intoxicants sold on our grounds.

Our receipt were large, but on account of extensive improvements our expenses were larger, and we could not pay premiums in full.

Wheat was of good quality but only about a half crop. Corn, a large crop but quality bad. Oats badly damaged by grasshoppers.

We have three tile factories in this county, and land that many thought of no value is now producing our best crops from tile draining.

Barbed wire is fast taking the place of all other fence material, nnd we are fencing stock in instead of out.

J. H. JACKSON,
Secretary.

POPLAR GROVE.

The Poplar Grove Agricultural and Mechanical Association held their third annual fair from October 5th to 9th, inclusive. The weather was very cool for the season of the year, and prevented the attendance from being what it should have been; still it was larger than usual. The display was larger, and of a much better quality, especially in horses, which was unusually fine. The cattle interest was fairly represented. The sheep and hog pens were all well filled with "fine wool, superior mutton and splendid porkers." The display of grain and vegetables was above the average. The floral hall, thanks to the ladies, was elegantly fitted up, and filled with all manner of domestic articles and textile fabrics. The receipts were sufficient to pay premiums in full and all expenses. We allow no horse racing nor gambling, and are profiting by their exclusion.

J. S. SPRAKER,
Secretary.

SOUTHEASTERN INDIANA.

All things considered our fair was a brilliant success, although the receipts of the exhibition were not large enough by several hundred dollars to pay premiums and expenses of holding the fair. This state of affairs was not on account of any mismanagement on the part of the directors, but was chargeable entirely to the miserable weather. The rain commenced on the first day and continued unceasingly until noon of Saturday, when the sun shone out and the people flocked to the grounds by the thousands, redeeming us from a complete failure.

The cattle show, both of Alderneys and their grades, and of Shorthorns and their grades, was fine and very much above the average of our fairs for the last three or four years. Especially is this true of the Alderney show. These cattle are gradually growing in favor here. The excellence of the general purpose horses shown was hardly up to the average of our fairs in general, but this deficiency in quality was more than made up in the show of the finest light harness horses ever seen here, and a larger and better exhibition of fine double teams and single roadsters than we ever had.

Of implements, manufactured articles, especially buggies, harness, stoves and tinware, sewing machines, musical instruments, etc., there was great variety, strong competition and beautiful exhibits. In fact, every department was well represented, better than usual, and although our premium list, in comprehensiveness and variety, will compare very favorably with any county or district fair, yet there were enough entries in our miscellaneous list of non-enumerated articles to make quite a fair by themselves. It seemed as though our friends from far and near (for we had exhibitors from many different counties of at least three States) had determined to help us make a great fair, and they succeeded admirably.

In floral hall the competition never before was nearly as great, and the displays of fancy work and those of art were remarkably beautiful, beyond anything of the kind ever seen here. Of needlework, both useful and fancy, and of table comforts, fruits, jellies, preserves, pickles, and everything in the ladies' department, there was endless variety and the quality of these exhibits was fully equal to the quantity. The usual space allotted for fruits was not half large enough and tents had to be used to display the great surplus.

The number that visited the fair Saturday afternoon proved conclusively that our grounds would have been crowded had the weather been favorable. Without fear then of reasonable contradiction, we will finish as we began, that, all things considered, our fair was a brilliant success. L. W. Cobb,

Secretary.

SWITZERLAND AND OHIO.

The annual fair of the Switzerland and Ohio District Agricultural Society, held at East Enterprise, September 8 to 12, was fully up to the standard of excellence attained by this society at our former exhibitions. The weather was unfavorable the first three days, but the fourth day the attendance was unusually large. The entries of articles aggregated nearly 1,200; and the show of live stock, also in the agricultural, horticultural and ladies' departments was very full and fine; in fact, the exhibition was commendable in all the varied classes. Law and order were enforced to a degree, and in a manner, not before attempted at our fairs. Nobody was disquieted thereby except the gamblers, liquor dealers and their confederates. The society's action in this regard met with a hearty endorsement by the public. The year's receipts were a little in excess of expenditures. The society is out of debt, financially sound, and in a fairly prosperous condition. We have occupied conservative ground in the matter of racing, offering some attraction and amusement in this way, yet not ignoring the more important matters of stock breeding, agricultural, mechanical and kindred interests.

The condition of agriculture in our district, we think, will compare favorably with the average condition and product of the country at large. Our crop report for 1885 is as follows: Wheat, badly winter killed and a short crop, ranging from twenty bushels per acre down to nothing, averaging perhaps not more than five bushels. Hay an average crop, yielding fron one-half ton on run-out meadows to two tons on best. Oats, acreage large, extra crop; average, about thirty bushels. Corn, acreage large, quality good; yield, from thirty to seventy-five bushels. Potatoes, many planted, quality not the best, and considered a half-crop; average, about seventy-five bushels. Tobacco, acreage increased; extra, both in yield and quality. Sorghum excellent. Onions and beans rather light. Fair crop of apples, also of the smaller fruits. The yield of honey not so good as last year. Hog crop about an average. Taken all in all the crops of 1885 are fair. Prices for hay, $10 to $12; potatoes, forty cents. On most other farm products, including cattle, sheep and hogs, prices have ruled low and not very satisfactory to the producer. We hear some complaint of a stringency in money matters—too much idle capital and not the usual activity in buying, selling and speculation.

We have little to note in regard to new methods or improvement in farming. We observe that there is much more fall plowing being done than formerly, turning up the soil that it may receive the benefits of an airing and freezing, giving it better tilth for the next year's crop. Also, we see that clover as a fertilizer is becoming the farmers' chief reliance.

In the matter of stock running at large, the test case carried up from our Switzerland Circuit to the Supreme Court, and decided adversely to public pasturage, will render it necessary for us to provide a place for old brindle, while neighbor Jones' corn-field is permitted to remain unfenced, and nearly everybody seems to think this is right.

In the matter of fences, the combination fence, palings interwoven with wire, gives general satisfaction.

About the middle of August a disastrous freshet visited our part of the country. Some six or eight inches of rainfall in as many hours swelled our creeks to immoderate proportions, carrying away five iron bridges and numerous wooden structures in Switzerland and Ohio Counties. Replacing these bridges will entail a very heavy expense on these counties. The destruction of private property was also great; many miles of fencing was carried off and hundreds of acres of corn and tobacco ruined.

About the middle of July an extensive conflagration visited Rising Sun, one of our county towns. The best business block in the city was burned out. The loss, which was very heavy, was largely borne by the insurance companies, and the town has been rebuilt with better and more modern improvements, now presenting a thriving appearance. Speaking of insurance, the frequent fires of mysterious origin have led to insinuations that the insurance business works evil. Certainly it would be unjust to debar honorable people the privilege of seeking security against casualty by fire; but if insurance companies were made responsible for the payment of the full amount of the policy issued, we think a better class of agents would be employed.

Some additional manufacturing interests have been established in this district the past year that now give promise of success. We believe that a tile factory in the western part of Switzerland County would prove remunerative to the proprietor and a benefit to the county as well, as the material for tile-making is there abundant, and the country very much needs underdrainage.

Among live stock we have had very little of disease during the past year, and at the present time stock is in good condition. The fall was late, and cattle found fair grazing until December. The winter thus far has been very mild, no snow worthy of mention, and only slight freezing. Wheat has a good start, but perhaps not more than seventy-five per cent. of the usual breadth is sown, owing to former discouragements and failure.

Emigration from our county has nearly ceased. The reactian has set in, and members who quitted us to try their fortunes in the Western world, and have been there prospecting for more congenial climes, richer soil and more lucrative employment, are returning, disgusted with their adventures. Our county affords all the essentials for a comfortable and happy living, only requiring moderate thrift, energy and intelligence to secure reasonable prosperity. WM. H. MADISON,

Secretary.

URMYVILLE DISTRICT.

The Urmyville Agricultural Association held its seventh annual fair October 8th to 10th. The weather was most delightful, and, although the people had been attending fairs for the past two months, the attendance was the best in the history of the Association. All the departments were fairly represented, but our fair coming late in the season made it especially favorable for the exhibition of grains, vegetables and fruits, all of which were far superior both in quantity and quality to any former exhibition in the county.

Special premiums were offered in several departments, but that which awakened the greatest competition among the ladies was 100 pounds of flour to the lady baking the best loaf of bread. There were a great many entries and competition very close, causing no little excitement and solicitude on the part of the "fair competitors."

The poultry department is also worthy of mention, as it would have been creditable to a State fair. Gambling devices of all kinds were excluded from the grounds, which secured the attendance of the best element of our people. Premiums were paid in full, leaving a balance in the treasury.

The wheat crop of our county (Johnson) was almost a failure in many places this season, but the corn crop unprecedentedly large. Those who raise corn to sell enjoy great advantages in the way of marketing, as we have three large starch factories in our county, two at Franklin and one at Edinburg. These factories consume annually over half a million bushels of corn.

Our farms are generally under a high state of cultivation, and many of our farmers have palatial homes, and are intelligent, enterprising, wide-awake men.

S. W. DUNGAN,
Secretary.

WAYNE, HENRY AND RANDOLPH.

Our society held its sixth annual fair at Dalton, Wayne County, September 8 to 11, inclusive. The number of entries show that the Dalton fair is among the very best in Indiana in the exhibit of live stock.

In the mechanical department the display has been meagre for two or three years, probably owing to our fair grounds being located about three miles from a railroad.

Owing to the rain we were unable to pay but 70 per cent. of premiums offered

The wheat crop in this section was nearly an average, but the price per bushel (80 cents) was below the cost of production.

The corn crop was large but contained too much of the soft and chaffy article.

The oat crop was good. Flax is not very largely cultivated here.

Mixed farming seems to predominate in this section, though some are giving more attention to thorough-bred stock and grazing. This we believe to be profitable as land needs rest and fertilizing.

Tile draining is practiced to some extent and timbered land is being cleared for cultivation.

Barbed wire, board and slat and wire fence is taking the place of the old rail fence.

J. E. DENNIS,
Secretary.

WELLS AND BLACKFORD.

The Wells and Blackford Agricultural Society held its ninth annual fair on new grounds, adjoining Montpelier, Blackford county. The lease on the old grounds at Five Points having expired, and no other grounds in the vicinity being obtainable, the Society purchased twenty acres located as above noted. Good, substantial halls were built, cattle and horse stalls constructed, and other improvements made, including the planting of about 400 shade trees, making a very comfortable fair ground. The fair was a financial success, premiums and expenses being paid in full. The live stock show was all that could have been desired and larger than was anticipated. The floral hall display in charge of the ladies was very fine, and reflected much credit on the exhibition.

Gambling was not permitted, neither was the sale of intoxicants, and consequently little or no drunkenness was observed. The two counties comprising our district can not be surpassed in the State in the matter of gravel roads. Public ditches have been built, and large tracts of land, heretofore deemed worthless, have been reclaimed and placed under cultivation. Large numbers of cattle and hogs are exported from these counties to Eastern markets; also, thousands of tons of baled hay are annually shipped. The question of fencing, and the kind to be used in place of the old worm-eaten rail, is agitating our farmers at present. The barbed wire does not give entire satisfaction, neither does board or hedge, and experimenting in this line is continually going on As to crops, wheat was excellent, corn good, hay an average, oats badly damaged by grasshoppers, potatoes a fair crop, and generally the farmers are satisfied with the year's yield.

J. D. Goodin,
Secretary.

XENIA DISTRICT.

The fourteenth annual exhibition of the society was held on our grounds adjacent to the town of Xenia, from August 31 to September 4, inclusive. Notwithstanding the rain during the week, the fair was a success, both as to the number of exhibits and quality of stock shown. The attendance was not as good as usual, although for two days it was fair, yielding a sufficient revenue to pay expenses and seventy-five per cent. on the premiums. A new departure was taken by the board in not allowing games of chance or intoxicating liquors in the enclosure, thereby reducing the receipts for such privileges. While this was felt keenly by the society, the general public was pleased and the society commended by the best class of our people, who much preferred taking the seventy-five cents on the dollar, derived in a legitimate way, than to have received the full amount from such disreputable practices as are usually carried on by gamblers and others, under their paid privileges. Our society is centrally located in one of the best agricultural districts in the State. The low lands of the Indian reserve have been, within the last few years, almost thoroughly under-drained, thereby reclaiming a large body of land that heretofore was worthless for farming purposes. Our farmers, as a class, are in a prosperous condition, as is evidenced by the fine houses and barns scattered all over our district.

John W. Eward,
Secretary.

EXHIBIT OF THE AGRICULTURAL SOCIETIES OF INDIANA, 1885.

NAME OF SOCIETIES.	PRESIDENT.	ADDRESS.	SECRETARY.	ADDRESS.
Indiana State Board of Agriculture	R. M. Lockhart	Waterloo	Alex. Heron	Indianapolis.
Bartholomew County Agr., Hort. and Ind. Ass'n	H. W. Lambert	Columbus	E. A. Jones	Hope.
Blackford County Agricultural Association			James R. Williams	Hartford City.
Boone County Stock Agricultural Society	John M. Ball.	Lebanon.	John W. Kise	Lebanon.
Cass County Agricultural Association	George Zinn	Logansport	D. W. Tomlinson	Logansport.
Clark County Agricultural Association.	Wm. C. McMillen	Charlestown	Dennis F. Willey	Charlestown.
Clinton County Agricultural Association.	James M. Davis	Mulberry	Myron H. Belknap	Kilmore.
Daviess County Agr. and Mech'l Association	John H. O'Neall	Washington	Austin F. Cabel	Washington.
Decatur County Agricultural Society.	Will Cumback	Greensburg	Ed. Kessing	Greensburg.
Delaware County Agricultural Society	John M. Graham	Muncie	John F. Wildman	Muncie.
Elkhart County Agricultural Society	A. P. Wright	Middlebury	John W. Irwin.	Goshen.
Fulton County Joint Stock Agricultural Society	Augustine Hisey	Tiosa.	E. T. Reed	Tiosa.
Gibson County Agricultural Society	Wm. W. Cockrum	Oakland City	S. Vet. Strain	Princeton.
Grant County Agricultural and Stock Ass'n	Hezekiah Steelman	Marion.	Oary Zombro.	Marion.
Green County Agricultural Society	Thos. Mason	Linton.	D. J. Terhune	Linton.
Hamilton County Agricultural Association.	G. W. Wheeler	Noblesville	G. M. Young.	Noblesville.
Henry County Agricultural Association	J. P. Nicholson	New Castle	F. M. Millikin	New Castle.
Howard County Agricultural Society	Willis Blanche	Kokomo	John T. Stringer.	Kokomo.
Huntington County Agricultural Society.	Robt. Simonton	Huntington	L. T. Bagley	Huntington.
Jackson County Agricultural Society.	J. Ran. Elliott	Vallonia.	J. H. Matlock	Brownstown.
Jasper County Agricultural Society	David H. Yeoman	Rensselaer.	Ezra C. Nowels	Rensselaer.
Jay County Agr., Hort. and Ind. Jt. Stock Co	Jonas Votaw	Portland.	L. L. Gilpin	Portland.
Jefferson Co. Grange Jub. Ag'l and Mech. Ass'n	D. P. Monroe	Saluda.	Thos. H. Watlington	Stony Point.
Jennings Co. Jt. Stock Agricultural Association.	V. C. Meloy	North Vernon.	C. D. Shank	Vernon.
Knox County Agricultural and Mech'l Society	Wm. W. Berry.	Vincennes	Gerard Reiter	Vincennes.
Lagrange County Agricultural Society.	Moses Bulyeat.	Lagrange	Elias Wright.	Lagrange.
Lake County Agricultural Society	Henry Ward	Leroy	John E. Luther	Crown Point.
Laporte County Agricultual Association	Wm. T. Anderson	Laporte	George C. Dorland	Laporte.
Madison County Joint Stock Agricultural Ass'n.	John P. Barnes	Anderson	C. K. McCullough	Anderson.
Marion County Agricultural Society	Sylvester Johnson.	Irvington	Mrs. J. G. Adams	Irvington,

Monroe County Agricultural Society			S. W. Bradfute	Bloomington.
Montgomery County Agricultural Society	Jasper N. Davidson	Whitesville	F. L. Snyder	Crawfordsville.
Newton County Agricultural Association	Andrew J. Ellis	Morocco	Clinton W. Hanger	Morocco.
Noble County Agricultural Society	Orlando Kimmell	Ligonier	Daniel W. Green	Ligonier.
Parke County Agricultural Society	R. C. McWilliams	Rockville	W. J. White	Rockville.
Perry County Agricultural and Mech'l Ass'n	H. C. Ackerman	Rome	W. C. Cunningham	Rome.
Pike County Agricultural Society	Samuel Hargrove	Union	Goodlet Morgan	Petersburg.
Porter County Agricultural Society	William Rigg	Valparaiso	E. S. Beach	Valparaiso.
Pulaski County Agricultural and Mech'l Ass'n	H. Kittinger	Winamac	A. D. Perry	Winamac.
Putnam County Agricultural Society	Mr. Coleman	Greencastle	W. S. Cox	Greencastle.
Randolph County Agr'l, Hort'l and Mech'l Ass'n	John R. Frazier	Winchester	W. A. Martin	Winchester.
Ripley County Agricultural Association	Reizin Johnson	Elrod	E. D. Freeman	Osgood.
Rush County Agricultural Society	Geo. W. Hall	Raleigh	F. B. Pugh	Rushville.
Steuben County Agricultural Society	A. W. Hendry	Angola	Frank M. Powers	Angola.
Sullivan County Agricultural Society			R. U. Caulson	Sullivan.
Tipton County Fair Company	Wesley A. Maze	Sharpesville	J. A. Gleason	Tipton.
Tippecanoe County Agricultural Association	Albert Henderson	Lafayette	J. M. Dresser	Lafayette.
Vigo County Agricultural Society	W. P. Ijams	Terre Haute	Chas. C. Oakey	Terre Haute.
Wabash County Agricultural Society	C. C. King	Puckerbrush	Fred J. Snavelly	Wabash.
Warren County Agricultural Joint Stock Co	James Goodin	West Lebanon	Geo. T. Bell	West Lebanon.
Warrick County Agricultural Association	Gurly Taylor	Boonville	Wm. L. Barker	Boonville.
Washington County A., H., M. and I. Ass'n	Jno. L. Rutherford	Campbellsburg	Fred L. Prow	Salem.
Wayne County Arg'l and Hor'l Society	Jesse C. Stevens	Centreville	Carrie C. Hodgen	Richmond.

DISTRICT AGRICULTURAL ASSOCIATIONS.

NAME OF SOCIETY.	PRESIDENT.	ADDRESS.	SECRETARY.	ADDRESS.
Acton District Association	J. E. McGaughey	Galladet	D. W. Pierson	Acton.
Bridgeton Union	J. A Reed	Bridgeton	Dempsey Seybold	Perth.
Eastern Indiana Agricultural Association	W. B. Newman	Kendallville	J. S. Conlogue	Kendallville.
Edinburg Union Agricultural Society	H. W. Scholler	Edinburg	J. A. Thompson, Jr	Edinburg.
Fairmount Union J. S. Agricultural Association	Enoch Beals	Fairmount	W. C. Winslow	Fairmount.
Fountain, Warren and Vermillion Agl. Ass'n	David Hunter	Covington	O. P. Lewis	Covington.
Knightstown Union Agricultural Association	J. W. Walker	Greenfield	W. E. Jackson	Knightstown.
Lawrence District Fair Association	O. W. Voorhis	Lawrence	Wm. B. Flick	Lawrence.
Loogootee District Fair Association	Thomas Walter	Loogootee	C. S. Wood	Loogootee.
Miami and Fulton Co. Dis't. Fair Society	J. A. McClung	Wagoners	Joshua Coffing	Wagoners.
N. Indiana and S. Mich. Agl. Society	Samuel Bowman	South Bend	C. G. Towle	Mishawaka.
Northeastern Ind. Agl. Ass'n	Jas. A. Chamberlain	Waterloo	J. A. Shull	Waterloo.
Newton Patrons' and Farmers' Agl. Fair	J. W. Whiteman	Iroquois, Ill	J. H. Jackson	Kentland.
Orleans Agricultural Association	John H. Bowles	Orleans	Henry Reed	Orleans.
Plainfield A. and H. Society	Daniel Cox	Cartersburg	James M. Barlow	Plainfield.
Poplar Grove A., H. and M. Association	W. W. Smith	Kokomo	J. S. Spraker	Kokomo.
Southeastern Agricultural Society			L. W. Cobb	Aurora.
Switzerland and Ohio Co. Agricultural Society	Jas. A. Hickman	Patriot	Wm. H. Madison	East Enterprise.
Warren Tri-County Association	J. Good	Warren	I. J. Beard	Warren.
Wells and Blackford Agricultural Society	Wm. J. Bugh	Hartford City	J. D. Goodin	Montpelier.
Wayne, Henry and Randolph Agl. Ass'n	B. B. Beesons	Dalton	J. E. Dennis	Dalton.
Xenia Union District A. and H. Society	John M. Abbott	Xenia	John W. Eward	Xenia.

EXHIBIT OF AGRICULTURAL SOCIETIES OF INDIANA.

NAME OF SOCIETY.	ENTRIES.														
	Horses.	Jacks and Mules.	Cattle.	Sheep.	Hogs.	Poultry.	Total Live Stock.	Mechanical.	Agricultural.	Horticultural.	Textile Fabrics.	Fine Arts.	Natural History.	Miscellaneous.	Special Premiums	Total.
Indiana State Board of Agriculture. . .	488	. . .	383	290	531	321	2,004	. . .	611	160	1,752	. . .	32	. . .	. . .	4,458
Bartholomew Co. Ag'l and Indust'l Ass'n	131	11	30	40	35	51	298	47	50	40	2	23	. . .	325	. . .	785
Blackford County Agricultnral Society. .	86	11	23	24	33	55	232	6	126	50	190	25	. . .	. . .	. . .	629
Boone County Stock Agricultural Society	268	18	45	75	68	144	631	100	246	60	479	52	. . .	73	. . .	1,629
Cass County Agricultural Association . .	168	1	46	67	61	169	512	75	331	111	16	141	. . .	645	. . .	1,836
Clark County Agricultural Ass'n.	97	6	36	13	. . .	.	152	18	30	45	67	. . .	. . .	66	15	393
Clinton County Agricultural Ass'n. . . .	303	. . .	48	139	137	65	692	50	158	58	360	112	. . .	236	. . .	1,666
Daviess County A., M. and I. Ass'n. . . .	140	8	63	40	50	25	326	15	76	16	118	27	. . .	240	. . .	818
Decatur County Agricultural Society. . .	164	16	58	31	63	68	400	45	40	20	608	31	. . .	280	. . .	1,424
Delaware County Agricultural Society . .	119	18	68	80	123	242	650	31	88	63	46	613	. . .	178	. . .	1,619
Elkhart County Agricultural Society. . .	150	. . .	39	42	33	56	342	110	192	136	350	141	. . .	22	. . .	1,300
Fulton Co. Jt. St'k Agr'l and Mech'l Soc.	187	. . .	55	35	21	36	334	88	373	87	246	48	. . .	14	. .	1,190
Gibson County Agricultural Society . . .	227	35	58	69	33	99	584	25	146	326	663	184	. . .	1,420	. . .	3,350
Grant County Agr'l and Stock Ass'n . . .	187	6	44	41	63	263	603	46	68	25	146	12	. . .	52	. . .	952
Greene County Agricultural Society . . .	154	16	46	61	25	108	410	28	311	24	176	40	. . .	. .	. . .	1,399
Hamilton County Agricultural Ass'n. . .	199	12	61	66	96	101	535	62	169	37	433	107	. . .	321	. . .	1,664
Henry County Agricultural Association .	245	15	54	93	67	46	520	73	65	85	725	38	. . .	. . .	55	1,561
Howard County Agricultural Society. . .	145	10	44	39	30	399	667	100	143	28	440	35	. . .	110	2	1,525
Jackson County Agricultural Society. . .	163	10	23	19	22	27	264	23	139	24	4	22	. . .	325	. . .	801
Jasper County Agricultural Society . . .	114	4	34	23	36	23	234	2	81	18	184	21	. . .	271	. . .	811
Jay County A., H. and I. Jt. Stock Co . .	152	2	55	83	67	203	562	53	205	214	334	36	. . .	706	. . .	2,110
Jefferson County G., J., A. and M. Ass'n .	60	2	30	25	10	47	174	55	30	30	33	. . .	. . .	15	. . .	337
Jennings County Jt. Stock Agr'l Ass'n. .	189	20	95	82	67	47	500	113	132	100	112	30	74	748	21	1,830
Knox County Agr'l and Mech'l Society .	288	35	85	56	88	256	808	347	248	475	237	846	. . .	.	. . .	2,961
Lagrange County Agricultural Society . .	152	. . .	69	60	38	33	352	22	246	175	116	40	. . .	76	. .	977

EXHIBIT OF AGRICULTURAL SOCIETIES OF INDIANA—*Continued.*

NAME OF SOCIETY.	Entries.														
	Horses.	Jacks and Mules.	Cattle.	Sheep.	Hogs.	Poultry.	Total Live Stock.	Mechanical.	Agricultural.	Horticultural.	Textile Fabrics.	Fine Arts.	Natural History.	Miscellaneous.	Special Premiums	Total.
Lake County Agricultural Society	215	...	102	16	44	46	523	27	40	...	44	47	...	69	...	750
Laporte County Agricultural Association	138	...	39	34	17	8	236	47	73	15	159	67	...	121	190	908
Madison County Agricultural Ass'n	139	...	52	117	86	369	763	41	70	255	451	164	...	...	...	1,744
Monroe County Agricultural Ass'n.	123	...	31	13	...	19	186	...	...	28	...	...	...	...	...	214
Montgomery County Agricultural Ass'n	684	28	185	147	264	412	1,720	372	204	86	107	364	...	...	...	2,853
Newton County Agricultural Ass'n.	102	12	43	12	35	58	272	15	56	100	42	31	...	12	...	523
Noble County Agricultural Society.	121	1	47	32	17	36	254	37	140	61	361	35	...	...	26	917
Parke County Agricultural Society.	306	38	53	45	105	45	592	74	116	29	...	420	...	75	15	1,319
Perry County Agr'l and Mech'l Ass'n	111	5	7	...	...	36	159	1	72	12	62	...	...	565	...	871
Pike County Agricultural Society	159	29	72	28	22	64	374	68	113	...	140	47	...	461	...	1,203
Porter County Agricultural Society.	95	3	42	23	32	16	211	36	...	64	34	8	...	29	...	382
Pulaski County Agr'l and Mech'l Ass'n	55	5	13	13	2	15	103	...	73	54	41	8	...	36	...	315
Randolph County A., H. and M. Ass'n	123	7	44	26	37	93	330	33	195	26	...	...	...	464	3	1,048
Ripley County Agricultural Association	155	70	43	46	23	65	342	12	179	58	130	10	...	83	...	814
Rush County Agricultural Society	274	14	82	82	69	159	673	59	294	101	625	75	...	90	...	1,623
Steuben County Agricultural Ass'n	109	8	60	53	58	45	333	61	1,283	148	319	85	...	142	...	2,371
Tipton County Fair Company.	283	10	60	97	174	84	708	40	236	...	689	...	...	60	...	1,733
Tippecanoe County Agricultural Ass'n.	236	3	61	103	133	37	536	33	116	19	...	376	...	183	8	1,844
Vigo County Agricultural Society	271	30	67	43	85	92	588	35	101	32	90	152	...	907	4	1,909
Wabash County Agricultural Society.	311	16	94	62	79	152	714	79	147	40	475	80	...	610	...	2,145
Warren County Joint Stock Company	219	10	24	29	68	25	375	62	121	42	322	30	...	392	...	1,344
Warrick County Agricultural Ass'n	184	32	84	23	19	23	365	28	109	...	415	30	...	650	...	1,962
Washington County A., H., M. & I. Ass'n	384	36	86	52	59	40	657	33	172	36	195	207	...	410	...	1,730
Wayne County Agr'l and Hort'l Society	...	...	...	...	...	...	...	...	60	75	20	...	...	30	10	195

DISTRICT AGRICULTURAL SOCIETIES.

NAME OF SOCIETY.	ENTRIES.														
	Horses.	Jacks and Mules.	Cattle.	Sheep.	Hogs.	Poultry.	Total Live Stock.	Mechanical.	Agricultural.	Horticultural.	Textile Fabrics.	Fine Arts.	Natural History.	Miscellaneous.	Special Premiums	Total.
Acton District Association	125	10	44	44	29	58	310	50	156	72	54	16	. .	166	. . .	820
Bridgeton Union	197	34	37	40	50	21	379	81	205	56	144	39	. . .	301	. . .	1,200
Eastern Indiana Agricultural Association	164	. . .	73	98	63	86	384	75	855	196	493	88	. . .	169	. . .	2,460
Edinburg Union Agricultural Society	191	17	34	28	32	65	367	327	77	49	26	. . .	. . .	647	. . .	1,493
Fairmount Union Joint Stock Ag'l Ass'n	163	11	107	47	63	175	566	32	185	330	310	62	. . .	. . .	. . .	1,285
Fountain, Warren & Vermillion Ag. Ass'n	219	22	57	48	72	8	428	. .	55	. . .	. . .	127	. . .	. . .	. . .	610
Knightstown Union Agricultural Ass'n	269	13	48	76	58	89	553	69	69	116	574	32	4	6	. . .	1.601
Lawrence District Fair Association	181	. . .	81	63	46	42	413	375	316	151	377	. .	. . .	56	60	1,748
Loogootee District Fair Association	196	3	35	16	20	6	276	13	35	20	. . .	42	. . .	346	. . .	732
Miami and Fulton County Fair Ass'n	75	. .	48	30	22	27	198	14	303	165	64	17	. . .	. . .	. . .	761
Northeastern Indiana Agricultural Ass'n	172	. . .	72	62	41	60	407	105	205	387	538	36	23	688	54	2,449
Orleans Agricultural Association	321	34	46	35	19	13	468	9	57	43	248	22	. . .	36	. . .	883
Patrons' and Farmers' Agr'l Association	147	4	69	26	48	56	361	7	63	157	122	13	. . .	84	3	799
Plainfield A. and H. Society	88	75	82	. .	21	46	330	32	216	18	65	3	1	145	32	824
Poplar Grove A., H. and M. Association	226	32	71	48	65	100	542	69	92	175	165	26	. . .	173	208	1,400
Southeastern Indiana Agricultural Soc	139	27	42	23	15	9	256	18	. . .	239	. . .	. .	. . .	200	. . .	1,371
Switzerland and Ohio County Ag'l Soc	193	35	55	47	31	56	417	69	352	52	209	29	. . .	859	. . .	1,187
Wells and Blackford Agricultural Society	94	7	37	115	49	71	273	54	86	440	296	. . .	. . .	59	. . .	1,289
Wayne, Henry and Randolph Ag'l Ass'n	338	16	57	45	48	134	638	17	194	181	201	. . .	. . .	140	. . .	1,271
Xenia Union Dist. Agr'l and H. Society	152	8	56	58	14	160	448	35	112	18	300	50	30	40	25	1,038

EXHIBIT OF AGRICULTURAL SOCIETIES OF INDIANA, 1885.

NAME OF SOCIETY.	PREMIUMS PAID.														
	Horses.	Jacks and Mules.	Cattle.	Sheep.	Hogs.	Poultry.	Total Live Stock.	Mechanical.	Agricultural.	Horticultural.	Textile Fabrics.	Fine Arts.	Natural History.	Miscellaneous.	Special Premiums	Total.
Indiana State Board of Agriculture	$3208	...	$1915	$587	$739	$402	$6851	...	$440	$750	$833	..	$129	...	...	$9,003
Bartholomew Co. Agr'l and Indus. Ass'n.	286	$23	129	52	68	27	585	...	12	8	8	$5	...	$152	...	771
Boone County Stock Agricultural Society	914	44	258	98	118	49	1,481	$27	130	21	181	35	...	41	...	1,919
Cass County Agricultural Association	1,347	4	366	113	105	108	2,043	100	97	61	8	64	...	294	.	2,669
Clark County Agricultural Association	229	16	78	22	...	...	346	10	11	18	15	..	...	18	$39	459
Clinton County Agricultural Association.	1,529	...	547	130	202	55	2,464	5	27	65	149	73	...	55	...	2,830
Davies County A., M and I. Association	353	30	287	77	118	21	659	38	32	12	63	20	...	87	...	1,800
Decatur County Agricultural Society	918	58	325	93	234	32	1,660	49	12	7	131	29	...	101	...	1,989
Delaware County Agricultural Society	733	24	237	118	175	65	1,352	73	121	63	...	96	...	45	...	1,750
Elkhart County Agricultural Society	966	...	167	60	45	26	1,264	65	45	58	110	37	...	...	...	1,713
Fulton Co. Joint Stock A. and M. Soc'y	269	...	168	35	44	18	556	51	82	39	48	20	...	10	...	808
Gibson County Agricultural Society	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	2,088
Grant County Agr'l and Stock Ass'n	618	14	170	96	99	89	1,087	84	29	24	54	4	...	22	...	1,305
Greene County Aricultural Society	401	42	141	112	66	81	843	27	133	20	82	25	...	...	...	1,131
Hamilton County Agr'l Association	361	51	276	101	164	51	1,004	20	115	32	182	48	...	80	...	1,839
Henry County Agricultural Association	674	27	225	102	122	29	1,177	44	16	23	202	14	...	...	37	1,516
Howard County Agricultural Society	888	30	149	87	61	444	1,659	100	79	27	221	55	...	57	30	2,200
Jackson County Agricultural Society	506	22	95	36	45	24	728	29	48	16	4	14	...	132	...	972
Jasper County Agricultural Society	473	4	85	31	52	18	665	...	15	18	25	10	...	64	..	1,466
Jay Co. A., H. and I. Joint Stock Co	770	8	209	110	273	65	1,435	38	71	56	47	12	...	118	...	1,769
Jennings Co. Joint Stock Agr'l Ass'n	1,100	47	360	111	190	45	1,853	54	260	40	36	11	8	119	10	2,391
Knox County A. and M. Society	1,189	143	628	190	336	270	2,756	107	84	210	127	273	...	...	85	3,642
Lagrange County Agricultural Society	251	..	144	82	46	22	545	39	37	29	31	28	...	37	...	1,368
Lake County Agricultural Society	938	...	281	36	108	24	1,387	28	30	...	31	10	...	90	...	1,577
Laporte County Agricultural Society	688	...	243	77	57	10	1,075	90	31	28	147	74	...	99	...	1,545

Madison Joint Stock Agricultural Ass'n	900	...	356	198	202	276	1,930	84	38	146	177	90	...	...	...	2,467
Marion County Agricultural Society	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	102
Monroe County Agricultural Society	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	425
Montgomery County Agr'l Ass'n	4,260	30	1,625	356	490	290	7,051	182	204	126	73	125	...	...	...	7,761
Newton County Agricultural Ass'n	240	35	305	37	136	80	833	...	64	50	...	...	...	15	...	1,043
Noble County Agricultural Society	198	...	180	55	29	29	494	15	69	10	88	18	...	2	1,214	1,912
Parke County Agricultural Society	412	57	294	66	126	24	979	43	26	42	...	125	...	...	300	1,518
Perry Co. Agr'l and Mich. Ass'n	163	6	11	...	...	36	...	...	10	6	9	...	...	27	...	371
Pike County Agricultural Society	940	61	326	54	61	40	1,482	26	42	...	33	36	...	130	...	1,749
Porter County Agricultural Society	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1,200
Randolph County A., H. and M. Ass'n	359	7	59	33	67	16	540	28	42	25	45	...	...	50	39	749
Ripley County Agricultural Ass'n	1,243	46	327	184	183	51	2,034	42	112	45	123	16	...	48	...	2.420
Rush County Agricultural Society	1,575	70	512	197	208	120	2,712	94	85	80	173	41	...	7	...	3.193
Steuben County Agricultural Society	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1,696
Tipton County Agricultural Society	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1,583
Tippecanoe County Agricultural Society	1,651	...	1,003	199	291	39	3,284	182	92	57	...	38	...	265	...	3,819
Vigo County Agricultural Society	1,762	65	417	161	212	69	2,686	49	32	22	39	108	...	203	250	3.389
Wabash County Agricultural Society	862	52	702	184	244	73	2,117	125	125	45	169	16	...	183	...	2,780
Warren County Agricultural Society	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1.255
Warrick County Agricultural Ass'n	558	129	265	81	70	23	1,126	28	66	...	169	16	...	167	...	1,573
Washington Co. A., H., M. and I. Ass'n	1.151	83	168	84	126	46	1,658	35	33	15	63	60	...	83	...	1,947
Wayne County Agr'l and Hort. Ass'n	...	...	...	...	...	...	...	...	25	40	15	...	...	20	20	120

DISTRICT AGRICULTURAL ASSOCIATIONS.

NAME OF SOCIETY.	Premiums Paid.															
	Horses.	Jacks and Mules.	Cattle.	Sheep.	Hogs.	Poultry.	Total Live Stock.	Mechanical.	Agricultural.	Horticultural.	Textile Fabrics.	Fine Arts.	Natural History.	Miscellaneous.	Special Prem.	Total.
Acton District Fair Association	$238	$9	$73	$48	$27	$29	$425	. . .	$20	$8	$8	$3	. . .	$14	. .	$502
Bridgeton Union	544	33	140	52	80	11	862	$50	33	27	57	17	. . .	86	. . .	1,134
Eastern Indiana Agricultural Ass'n	414	. . .	270	115	88	36	923	. . .	. . .	. . .	. . .	. . .	. . .	1,007	. . .	2,348
Edinburg Union Agricultural Ass'n	998	60	441	149	159	60	1,867	367	55	40	26	. . .	. . .	113	. . .	2,470
Fairmount Union Joint St'k Ag'l Ass'n	401	26	356	119	108	110	1,122	68	45	73	113	35	. . .	349	. . .	1,808
Fountain, Warren and Ver. Ag'l Ass'n	900	75	250	100	200	8	1,533	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .
Knightstown Union Agricultural Ass'n	891	70	547	161	162	48	1,822	167	61	112	201	40	. . .	. . .	. . .	2,467
Lawrence District Fair Association	504	. . .	91	64	76	18	754	. . .	41	29	48	. . .	. . .	9	$60	942
Loogootee District Fair Association	275	10	75	41	35	1	439	5	15	12	. . .	10	. . .	89	. . .	571
Miami and Fulton District Fair Ass'n	71	. . .	62	14	21	7	175	3	25	14	7	2	. . .	. . .	. . .	227
Northeastern Indiana Agricultural Ass'n	400	. . .	203	89	105	48	845	90	39	65	197	36	$38	140	21	2,330
Orleans Agricultural Association	402	56	111	44	31	11	656	21	25	27	69	11	. . .	337	. . .	1,148
Patrons' and Farmers' Ag'l Ass'n	101	5	63	12	41	11	237	. . .	7	13	11	5	. . .	33	7	332
Poplar Grove A., H. and M. Ass'n	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	1,000
Southeastern Indiana Ag'l Ass'n	410	34	167	46	110	7	794	50	56	45	. . .	. . .	. . .	360	. . .	1,275
Switzerland and Ohio Co. Ag'l Society	886	57	230	72	87	30	1,364	124	181	20	145	34	. . .	46	. . .	1,916
Warren Tri-County Agricultural Society	1,364	35	518	100	293	101	2,411	99	110	124	. . .	60	. . .	52	. . .	2,856
Wells and Blackford Agricultural Soc'y.	180	27	171	121	158	39	636	48	28	146	106	. . .	. . .	. . .	. . .	1,150
Wayne, Henry & Randolph Co. A. Ass'n	161	15	51	27	52	30	338	35	45	45	. . .	. . .	. . .	3	. . .	467
Xenia Union Dist. A. and H. Society	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	1,264

EXHIBIT OF AGRICULTURAL SOCIETIES OF INDIANA, 1885.

NAME OF SOCIETY.	RECEIPTS.						DISBURSEMENTS.						
	Admission fees.	License fund.	Entry fees.	Privileges.	All other sources.	Total.	Rents and old claims.	Improvements.	Salaries.	Premiums paid.	Expenses of Fair.	All other sources.	Total.
Indiana State Board of Agriculture	$21,238	. . .	$677	$4,641	$10,147	$36,703	$340	$2,373	$1,416	$9,003	$4,305	$6,582	$24,019
Bartholomew County A. and I. Ass'n	1,079	. . .	79	135	259	1,553	250	25	85	771	353	. . .	1,484
Blackford County Ag'l Society	702	. . .	94	75	. . . .	872	. . .	. . .	. . .	. . .	. . .	. . .	. . .
Boone County Stock Ag'l Society	3,071	$25	20	592	244	3,952	. . .	1,254	65	1,919	713	. . .	3,952
Cass County Agricultural Society	3,503	. . .	387	445	508	4,844	664	. . .	300	2,668	1,161	38	4,833
Clark County Agricultural Ass'n	560	. . .	170	47	97	876	. . .	150	. . .	459	296	. . .	906
Clinton County Agricultural Ass'n	292	20	416	829	3,214	4,871	80	50	360	2,830	966	383	4,670
Daviess County A., M. and I. Ass'n	1,039	25	516	662	1,099	4,242	1,368	844	. . .	1,800	258	. . .	4,271
Decatur County Agricultural Ass'n	1,980	25	481	504	44	3,036	. . .	235	110	1,989	470	. . .	2,805
Delaware County Agricultural Society	2,579	. . .	840	34	. . . .	3,453	328	605	118	1,750	659	. . .	3,453
Elkhart County Agricultural Society	2,218	151	380	320	2,030	5,000	. . .	1,175	. . .	1,713	250	1,307	4,491
Fulton County Joint-Stock A. and M. Ass'n	1,485	. . .	34	145	111	1,774	206	586	95	808	282	14	1,993
Gibson County Agricultural Society	3,780	. . .	53	654	1,320	5,809	. . .	1,310	155	2,088	1,142	. . .	4,696
Grant County Ag'l and Stock Ass'n	1,699	. . .	404	250	178	2.531	168	149	96	1,305	697	26	2,445
Greene County Agricultural Society	986	25	234	82	23	1,350	24	70	25	1,131	74	13	1,337
Hamilton County Agricultural Ass'n	2,140	10	167	315	163	2,797	214	207	152	889	226	116	2,756
Henry County Agricultural Ass'n	1.900	45	. . .	204	375	2,524	. . .	850	75	1,016	. .	350	2,791
Howard County Agricultural Society	2,389	212	504	724	2,150	5,981	. .	2,300	290	2,200	1,150	. . .	5,910
Huntington County Agricultural Society	. . .	. . .	. . .	. . .	. . . .	2,852	. . .	. . .	. . .	. . .	. . .	. . .	. .
Jackson County Agricultural Society	1,100	240	217	275	20	1,652	. . .	73	50	972	359	. . .	1,455
Jasper County Agricultural Society	747	. . .	276	278	977	2,278	23	425	85	1,466	127	97	2,224
Jay County A., H. and I. Joint-Stock Co	2,555	10	314	300	318	3,498	. . .	420	453	1,769	327	127	3,098
Jefferson County Grange Jub. A. and M. Ass'n	264	. . .	. . .	59	. . . .	323	38	. . .	. . .	. . .	304	. . .	342
Jennings County Joint-Stock Ag'l Ass'n	3,850	208	548	800	25	5,431	. . .	480	150	2,391	460	50	3,531
Knox County Agricultural and M. Society	4,845	. . .	806	1,166	. . . .	6,818	. . .	639	840	3,647	876	527	6,529

EXHIBIT OF AGRICULTURAL SOCIETIES OF INDIANA, 1885—Continued.

NAME OF SOCIETY.	RECEIPTS.						DISBURSEMENTS.						
	Admission fees.	License fund.	Entry fees.	Privileges.	All other sources.	Total.	Rents and old claims.	Improvements.	Salaries.	Premiums paid.	Expenses of Fair.	All other sources.	Total.
Lagrange County Agricultural Society	$1,345	...	$7	$101	$1,801	$3,255	...	$1,200	$105	$1,368	$301	$238	$3,214
Lake County Agricultural Society	1,200	...	550	12	400	2,163	...	313	80	1,577	110	83	2,164
Laporte County Agricultural Ass'n	1,371	$25	348	129	275	2,149	...	159	125	1,545	309	...	2,140
Madison County Joint-Stock Ag'l Ass'n	3,435	25	122	874	232	4,689	...	582	488	2,467	490	247	4,247
Marion County Agricultural Society	...	70	...	...	...	70	...	...	34	102	...	10	148
Monroe County Agricultural Society	...	...	...	...	...	974	...	494	...	425	...	...	919
Montgomery County Agricultural Society	7,467	110	1,252	717	364	9,910	...	3,000	400	7,761	320	...	11,481
Newton County Agricultural Ass'n	765	175	150	...	...	1,090	...	100	...	550	450	...	1,100
Noble County Agricultural Society	2,027	40	468	306	163	3,007	$213	378	125	1,912	362	14	3,007
Parke County Agricultural Society	1,832	50	120	399	101	2,502	531	184	60	1,518	305	...	2,598
Perry County Ag'l and Mech. Ass'n	271	15	...	43	...	329	...	100	75	371	80	...	626
Pike County Agricultural Society	2,201	15	571	495	39	3,322	...	1,835	406	1,749	511	118	4,620
Porter County Agricultural Society	1,519	50	291	169	316	2,297	132	604	160	1,200	200	...	2,297
Pulaski County A. and M. Ass'n.	255	10	...	34	58	357	...	78	58	...	255	...	391
Randolph County A., H. and M. Ass'n.	1,125	10	92	473	14	1,714	...	27	225	749	266	155	1,422
Ripley County Agricultural Ass'n.	1,695	...	528	430	140	2,795	...	...	110	2,420	230	...	2,760
Rush County Agricultural Society	2,278	30	809	751	3,444	8,314	...	1,910	443	3,193	326	2,209	8,083
Steuben County Agricultural Ass'n	2,552	75	403	360	638	4,031	94	625	75	1,696	225	327	3,043
Sullivan County Agricultural Society	...	...	333	8	2,412	2,753	...	1,803	...	768	...	...	2,571
Tipton County Fair Association	2,479	4	159	338	156	3,137	450	1,032	...	1,583	...	...	3,065
Tippecanoe County Agricultural Ass'n	3,621	84	340	445	1,083	5,574	...	...	...	3,818	1,954	...	5,573
Vigo Agricultural Society	2,905	50	1,037	589	1,785	6,367	23	1,319	357	3,122	1,436	98	6,381
Wabash County Agricultural Society	3,123	15	493	470	652	4,756	434	308	440	2,780	667	102	4,733
Warren County Ag'l Joint-Stock Co.	1,422	...	...	612	35	2,069	400	104	...	1,255	247	114	2,121
Warrick County Agricultural Ass'n	1,193	...	490	240	7	1,931	...	81	168	1,573	308	201	2,335
Washington County A., H., M. and I. Ass'n	2,944	10	350	354	276	2,995	403	139	200	1,947	242	63	2,995
Wayne County Ag'l and Hort. Ass'n	32	41	...	...	...	73	...	...	...	120	40	10	170

DISTRICT AGRICULTURAL SOCIETIES.

NAME OF SOCIETY.	RECEIPTS.						DISBURSEMENTS.						
	Admission Fees.	License Fund.	Entry Fees.	Privileges.	All Other Sources	Total.	Rents and Old Claims.	Improvements.	Salaries.	Premiums Paid.	Expenses of Fair.	All Other Sources	Total.
Acton District Fair Association	$402	. . .	$161	$48	$76	$688	$50	$96	. . .	$502	. . .	$130	$779
Bridgeton Union	1,068	. . .	186	197	193	1,596	. . .	. . .	. . .	1,133	$140	. . .	1,573
Eastern Indiana Agricultural Association	3,752	. . .	. . .	1,150	1,094	5,997	1,503	513	$75	2,348	1,767	314	5,522
Edinburg Union Agricultural Association	1,277	. . .	537	464	370	2,648	. . .	. . .	175	1,636	626	26	2,464
Fairmount Union Joint Stock Agr'l Associat'n	2,128	. . .	382	392	438	3,340	. . .	. . .	194	1,808	175	304	2,482
Fountain, Warren and Vermillion Agr'l Ass'n	2,074	$40	204	385	533	3,236	. . .	83	150	1,683	534	42	2,494
Knightstown Union Agricultural Association	2,469	293	379	483	. . .	3,425	300	100	165	2,467	. . .	. . .	3,032
Lawrence District Fair Association	771	. . .	135	111	. . .	1,017	. . .	157	46	881	116	. . .	1,100
Loogootee District Fair Association	893	. . .	. . .	204	71	1,169	. . .	176	. . .	571	178	244	1,170
Miami and Fulton County Dist. Fair Society	206	42	. . .	48	6	303	. . .	20	15	227	55	. . .	318
Northern Ind. and Southern Mich. Agr'l Soc	. . .	. . .	. . .	. . .	. . .	17,066	. . .	. . .	. . .	. . .	. . .	. . .	16,918
Northeastern Indiana Agricultural Associat'n	2,562	71	279	444	1,165	4,522	359	498	245	2,330	465	575	4,474
Orleans Agricultural Association	. . .	. . .	. . .	. . .	. . .	1,817	. . .	. . .	50	1,148	340	. . .	1,538
Patrons' and Farmers' Agr'l Fair Association	681	. . .	. . .	195	230	1,106	62	471	. . .	332	241	. . .	1,106
Plainfield Agr'l and Hort'l Association	345	10	. . .	14	. . .	369	186	41	145	. . .	130	10	412
Poplar Grove Agr'l, Hort'l and Mech. Ass'n	1,003	. . .	234	107	206	1,550	. . .	300	40	1,000	410	. . .	1,750
Switzerland and Ohio County Agr'l Society	2,146	20	340	336	296	3,139	44	40	125	1,916	499	385	3,010
Warren Tri-County Agricultural Society	3,027	. . .	710	487	236	4,425	. . .	. . .	. . .	2,341	. . .	824	3,165
Wells and Blackford Agricultural Society	826	. . .	186	185	910	2,107	. . .	1,200	. . .	1,150	165	. . .	2,515
Wayne, Henry and Randolph Agr'l Society	787	. . .	. . .	45	64	896	40	50	. . .	467	337	. . .	815
Xenia Union District Agr'l and Hort'l Society	997	342	378	. . .	413	2,130	475	. . .	. . .	1,264	. . .	300	2,039

INDIANA PRODUCTS.

We are favored by the Bureau of Statistics with the following table of the estimated gross value of the products of Indiana for 1885:

Products.	*Acres.*	*Bushels.*	*Value of Prod.*
Wheat	2,732,250	31,640,086	$27,210,474
Corn	3,216,997	115,433,914	34,630,174
Oats	822,934	25,228,033	6,307,008
Barley	9,186	150,631	82,869
Rye	29,875	440,597	250,252
Buckwheat	5,790	63,004	40,953
Irish Potatoes	74,434	5,801,524	2,088,549
Sweet Potatoes	2,552	183,928	137,946
Flax Seed.	17,767	132,181	198,371
Clover Seed		221,045	1,105,225
Timothy Seed		31,853	57,335
		Tons.	
Clover Hay	1,051,685	1,672,668	13,030,084
Timothy Hay	1,368,371	1,937,938	15,096,537
Flax Straw			60,000
		Pounds.	
Tobacco	24,386	18,404,475	1,104,268
Wool.		4,612,177	922,435
Coal and Quarries			3,703,418
Garden			5,074,629
Orchard (including cider, wine and vinegar)			3,750,320
Dairy			11,758,390
Poultry, Eggs and Feathers.			4,973,451
Honey, Sorghum, Maple Molasses and Sugar			5,903,741
Hogs, slaughtered			19,225,170
Sheep, slaughtered			278,845
Cattle, slaughtered.			8,418,270
Total Value of Products			$160,908,713
Estimated Value of Manufactured Products			150,000,000
Total			$310,908,713

The preceding table is not complete, as the timber product is omitted, which is estimated at about		$10,000,000

The increase of live stock does not appear, which is estimated as follows:

Young horses	$1,800,000	
Young cattle	2,500,000	
Young hogs	2,000,000	
Lambs	500,000	
		6,800,000

The home consumption of meat, as estimated for the 287,280 families in the State, not including cities, an average of five persons to each family, on eighty acres each:

Fat cattle, an average of $25 to each family	$7,182,000	
Fat hogs, an average of $40 to each family	11,491,200	
Fat sheep, an average of $5 to each family	1,436,400	
		20,109,600

The dairy product of home consumption is estimated at 25 cts. per day for each family (as stated)	$26,214,300	
Poultry and eggs the same estimate	26,214,300	
		52,428,660
Total		$89,338,260

This added to the foregoing table swells the grand aggregate to $400,246,973 worth of products for one season. Such figures are surprising when we consider that not more than one-half of the State is in a cultivated condition, and proves that Indiana can support eight times more than her present population as compared with older countries.

It is estimated that about 75 per cent. of the gross production is used in home consumption, including seed, clothing, etc. The balance goes to improvements, education, taxation, recreation and surplus.

SECRETARY.

STATISTICS OF

TABLE *showing the product of each principal crop for the years designated, with the Agriculture at*

PRODUCTS.	1885.	1884.	1883.
Corn produced, bushels	131,994,000	104,757,000	95,620,000
Corn, average yield per acre, bushels	27.	29.	27.
Corn, number of acres	3,720,681	3,612,312	3,541,482
Corn, value per bushel	$0.33	$0.34	$0.41
Corn, total valuation	$38,278,260	$35,617,380	$39,204,200
Wheat produced, bushels	26,659,000	33,745,000	28,447,800
Wheat, average yield per acre, bushels	10.4	12.5	14.
Wheat, number of acres	2,518,455	2,708,016	2,735,370
Wheat, value per bushel	$0.81	$0.67	$1.05
Wheat, total valuation	$22,926,740	$22,609,150	$27,025,410
Rye produced, bushels*	440,597	256,000	250,743
Rye, average yield per acre, bushels	14.	10.	9.9
Rye, number of acres	29,875	25,511	25,258
Rye, value per bushel	$0.59	$0.54	$0.65
Rye, total valuation	$250,252	$138,240	$162,963
Oats produced, bushels	27,178,000	21,742,000	21,304,100
Oats, average yield per acre, bushels	27.6	30.	29.6
Oats, number of acres	1,014,630	724,736	717,560
Oats, value per bushel	$0.29	$0.27	$0.32
Oats, total valuation	$6,794,500	$5,870,340	$6,817,312
Barley produced, bushels*	150,631	443,000	340,956
Barley, average yield per acre, bushels	16.	21.6	21.6
Barley, number of acres	9,186	20,530	15,792
Barley, value per bushel	$0.55	$0.57	$0.55
Barley, total valuation	$82,869	$252,510	$187,526
Buckwheat produced, bushels*	63,004	80,000	70,984
Buckwheat, average yield per acre, bushels	11.	9.3	8.7
Buckwheat, number of acres	5,790	8,566	8,158
Buckwheat, value per bushel	$0.65	$0.67	$0.90
Buckwheat, total valuation	$40,952	$53,600	$63,706
Potatoes produced, bushels*	5,801,524	7,015,000	8,477,000
Potatoes, average yield per acre, bushels	78.	76.	90.
Potatoes, number of acres	74,434	92,305	94,189
Potatoes, value per bushel	$0.36	$0.35	$0.33
Potatoes, total valuation	$2,088,548	$2,455,250	$2,797,413
Tobacco produced, pounds*	18,404,475	9,318,000	8,471,246
Tobacco, average yield per acre, pounds	750.	727.	714.
Tobacco, number of acres	24,386	12,812	11,863
Tobacco, value per pound	$0.06	$0.07	$0.08
Tobacco, total valuation	$1,104,268	$624,306	$635,343
Hay produced, tons*	3,610,606	2,016,000	1,876,595
Hay, average yield per acre, tons	1.40	1.40	1.46
Hay, number of acres	2,420,056	1,440,000	1,285,339
Hay, value per ton	$7.79	$7.30	$8.50
Hay, total valuation	$28,126,620	$14,716,800	$15,951,058
Acreage cultivated, total	9,817,493	8,644,788	8,435,011
Valuation, total	$99,693,009	$82,337,576	$92,844,951

*1885 crops of potatoes, tobacco and hay taken from Indiana Report Bureau of Statistics.

INDIANA PRODUCTS.

average yield per acre and valuation, taken from the reports of the Department of Washington.

1882.	1881.	1880.	1879.	1878.	1877.	1876.	Averages of 10 years.
107,484,300	76,618,000	99,229,300	134,920,500	138,252,000	96,000,000	99,000,000	108,667,310
31.3	21.8	29.	33.	32.8	30.	30.	28.9
3,438,332	3,657,800	3,421,700	4,088,500	4,215,000	3,200,000	3,300,000	3,619,589
$0.48	$0.60	$0.40	$0.34	$0.27	$0.34	$0.34	$0.39
$51,592,464	$47,770,800	$39,691,720	$45,872,970	$37,328,040	$32,640,000	$33,660,080	$99,695,228
45,461,800	31,353,000	49,766,758	43,709,960	33,136,000	24,600,000	20,000,000	33,687,931
16.5	10.8	16.8	20.3	16.	14.5	11.	14.3
2,763,000	2,903,100	2,962,307	2,153,200	2,071,000	1,696,552	1,818,181	2,400,918
$0.90	$1.27	$0.99	$1.17	$0.81	$1.13	$1.02	$0.98
$40,915,620	$39,818,310	$49,269,090	$51,140,653	$26,840,160	$27,798,000	$20,400,000	$32,874,313
263,940	249,000	304,038	504,000	435,000	540,000	520,000	376,332
10.8	10.2	13.3	17.5	14.5	15.	12.2	12.6
24,522	24,400	22,860	28,800	30,000	36,000	42,622	28,985
$0.67	$0.93	$0.70	$0.71	$0.51	$0.56	$0.71	$0.66
$176,840	$231,570	$212,827	$357,840	$221,850	$302,400	$369,200	$242,400
18,853,200	15,711,000	15,710,978	14,028,310	16,487,200	13,750,000	13,270,000	17,793,478
26.8	23.	24.7	28.3	29.6	25.	22.7	26.7
703,490	683,000	636,072	495,700	557,000	550,000	584,581	665,677
$0.35	$0.42	$0.33	$0.28	$0.20	$0.24	$0.31	$0.30
$6,598,620	$6,598,620	$5,184,623	$3,927,927	$3,297,440	$3,300,000	$4,113,700	$5,249,908
415,800	385,000	410,000	550,800	500,000	......	400,000	399,576
25.5	26.	25.	27.	25.	......	15.2	22.5
16,280	14,800	16,400	20,400	20,000	......	26,315.	17,633
$0.75	$1.05	$0.81	$0.78	$0.89	......	$0.79	$0.75
$311,850	$404,250	$332,100	$429,624	$445,000	......	$316,000	$306,858
88,480	79,000	106,110	160,000	135,520	.....	160,000	104,766
11.2	11.	13.5	20.0	15.4	......	17.2	13.
7,920	7,200	7,860	8,000	8,800	......	9,302	7,955
$0.77	$0.99	$0.78	$0.70	$0.60	......	$0.76	$0.76
$68,130	$78,210	$82,766	$112,000	$81,312	......	$121,600	$88,141
7,227,060	2,961,910	3,469,200	4,080,000	3,840,000	5,800,000	4,300,000	5,302,150
80.6	35.	59.	68.	64.	84.	65.	70.
89,704	84,626	58,800	60,000	60,000	69,047	66,158	74,925
$0.50	$1.06	$0.59	$0.41	$0.47	$0.38	$0.56	$0.51
$3,613,530	$3,139,625	$2,046,828	$1,672,800	$1,804,800	$2,204,000	$2,408,000	$2,423,078
9,108,860	7,719,373	7,609,030	6,644,400	8,446,000	.....	16,500,000	10,246,819
806.	717.	715.	840.	820.	......	750.	759.
11,298	10,760	10,642	7,910	10,300	......	22,000	16,885
$0.07	$0.07	$0.05	$0.05	$0.035	......	$0.057	$0.15
$637,620	$578,952	$380,451	$332,220	$295,610	......	$940,500	$614,363
1,649,633	1,374,694	1,481,760	1,411,200	1,680,000	1,050,000	1,150,000	1,130,048
1.31	1.20	1.48	1.21	1.40	1.24	1.25	1.35
1,260,136	1,145,578	1,001,189	1,166,281	1,200,000	846,774	920,000	1,272,535
$9.00	$12.20	$10.30	$9.84	$6.06	$6.50	$8.57	$8.61
$14,846,697	$16,771,267	$15,262,128	$13,886,208	$10,180,800	$6,825,000	$9,855,500	$14,642,208
8,314,682	8,531,264	8,137,830	8,027,791	8,172,100	6,398,373	6,789,154	8,126,848
$118,761,371	$115,397,604	$112,462,533	$117,732,242	$80,495,012	$73,069,400	$72,184,500	$96,497,820

INDIANA AGRICULTURAL STATISTICS, 1885.

Through the courtesy extended this department by Hon. Will A. Peelle, Chief of the Bureau of Statistics, we are enabled to compile from the advance (and unpublished) returns in his office the following condensed summary of all the principal productions of the State for the year 1885, and to compare the same with the total yield of the past four years:

CORN.

COMPARATIVE YIELD.

Year.	*Bushels.*	*Acres.*	*Average Bushels per Acre.*
1885	115,433,914	3,216,997	35.8
1884	89,159,799	3,137,840	28.4
1883	89,699,237	3,125,376	28.7
1882	115,699,797	3,312,683	34.9
1881	89,599,444	3,626,909	24.7

The principal corn-producing counties of the State for the year 1885:

County.	*Bushels Produced.*	*Average Bushels per Acre.*
Tippecanoe	2,994,096	39.09
Rush	2,660,437	43.09
Benton	2,448,800	33.01
Shelby	2,460,677	40.01
Wayne	2,279,108	42.00

Counties producing largest average number of bushels per acre, 1885:

County.	*Bushels Produced.*	*Average Bushels per Acre.*
Decatur	1,710,365	45.07
Posey	1,859,720	44.07
Union	935,376	44.03
Rush	2,660,437	43.09
Tipton	1,490,150	43.04

Counties in the State having the largest production of corn according to size, 1885:

County.	*Area, Square Miles.*	*Total Production.*	*Average per Square Mile.*
Rush	414	2,660,437 bush.	6,426 bush.
Shelby	408	2,460,677 bush.	6,031 bush.

It will be observed, the above tables show the largest average production of corn (35.8 bushels) to the acre in the State for 1885, than for any previous year since 1880, and that, although Decatur ranks first as a corn-producing county, according to acreage planted, she falls far short of being the heaviest producer as to number of bushels reported, Tippecanoe leading in amount produced.

WHEAT.

COMPARATIVE YIELD.

Year.	*Bushels.*	*Acres.*	*Average Bushels per Acre.*
1885	31,640,086	2,732,250	11.5
1884	40,531,200	2,990,811	16.8
1883	31,405,573	3,049,209	10.2
1882	46,928 643	3,063,348	15.3
1881	30,635,668	3,210,547	9.5

The principal wheat-producing counties of the State for the year 1885:

County.	*Bushels Produced.*	*Average Bushels per Acre.*
Elkhart	855,577	17.3
Laporte	838,792	17.3
St. Joseph	826,103	19.6
Gibson	800,105	11.8
Clinton	746,612	14.5

Counties producing the largest average yield per acre, 1885:

County.	*Bushels Produced.*	*Average Bushels per Acre.*
St. Joseph	826,103	19.6
Tipton	541,581	19.5
Lake	46,817	19.1
Lagrange	741,369	18.2
Noble	719,274	18.1

Counties in the State having the largest production of wheat according to size, 1885:

County.	*Area, Square Miles.*	*Total Production.*	*Average per Square Mile.*
St. Joseph	330	826,103 bush.	2,503 bush.
Tipton	260	541,581 bush.	2,083 bush.

The above average in the State for 1885 (11.5 bushels to the acre) shows the wheat crop to be one and one-tenth bushels to the acre short of an average crop for the past five years; that St. Joseph ranks first as a wheat-producing county, while Elkhart has the largest actual production in bushels for 1885.

OATS.

COMPARATIVE YIELD.

Year.	*Bushels.*	*Acres.*	*Average Bushels per Acre.*
1885	25,228,033	822,934	30.7
1884	23,576,117	791,843	29.7
1883	19,567,789	656,296	29.8
1882	19,615,516	684,822	28.6
1881	14,398,420	580,279	24.8

The principal oat-producing counties of the State for the year 1885:

County.	*Bushels Produced.*	*Average Bushels per Acre.*
Benton	1,045,584	31.07
Lake	719,293	32.07
Newton	628,987	28.04
Allen	607,583	35.1
Laporte	577,785	34.5

Counties producing the largest average yield per acre, 1885:

County.	*Bushels Produced.*	*Average Bushels per Acre.*
Fayette	159,007	52.2
Rush	228,964	50.4
Union	103,054	46.1
Shelby	178,065	44.6
Henry	259,104	43.4

Counties in the State having the largest production of oats according to size, 1885:

County.	*Area, Square Miles.*	*Total Production.*	*Average, per Square Mile.*
Benton	378	1,045,584 bush.	2,766 bush.
Newton	382	628,987 bush.	1,646 bush.

In oats the year 1885 shows the largest acreage since 1880, and the largest average number of bushels to the acre during the same period. Fayette ranks first as an oat-producing county, and Benton produced the most bushels during the year.

BARLEY.

COMPARATIVE YIELD.

Year.	*Bushels.*	*Acres.*	*Average Bushels per Acre.*
1885	150,531	9,186	16.3
1884	259,106	11,907	22.6
1883	399,183	20,172	14.3
1882	1,138,717	44,242	25.7
1881	526,364	. . .	. .

The principal barley-producing counties of the State for the year 1885:

County.	*Bushels Produced.*	*Average Bushels per Acre*
Dearborn	20,346	15.01
Marion	10,580	14.3
Franklin	10,230	13.3
Miami	5,860	32.7
St. Joseph	5,793	18.7

Counties producing the largest average yield per acre, 1885:

County.	*Bushels Produced.*	*Average Bushels per Acre.*
Tipton	2,340	39.
Knox	2,827	34.
Miami	5,860	32.7
Howard	3,665	27.1
Vanderburgh	1,040	26.

The barley crop for 1885 was three and four-tenths (3.4) bushels to the acre below an average for the past five years in the State, while the acreage planted was the smallest for the same period (five years).

Tipton ranked first as a barley-producing county, while Dearborn produced the greatest number of bushels during 1885.

RYE.

COMPARATIVE YIELD.

Year.	*Bushels.*	*Acres.*	*Average Bushels per Acre.*
1885	440,597	29,875	14.7
1884	434,266	32,373	13.4
1883	358,513	26,604	13.4
1882	548,405	36,695	14.9
1881	123.177	15,839	7.7

The principal rye-producing counties of the State for the year 1885:

County.	*Bushels Produced.*	*Average Bushels per Acre.*
Elkhart	33,982	16.5
Pulaski	28,429	15.8
Jasper	25,238	12.9
Starke	24,469	14.5
Switzerland	19,348	9.3

Counties producing the largest average yield per acre, 1885:

County.	*Bushels Produced.*	*Average Bushels per Acre.*
Allen	19,153	25.2
Tipton	1,610	24.03
Jackson	4,376	23.1
Henry	1,695	22.7
Adams	1,960	22.5

The rye crop in the State for 1885, as is shown above, was the largest average production to the acre than for any year in five, except 1882, and was only eclipsed then by a fraction of a bushel (⅕). Allen ranks first as a rye-producing county, while Elkhart produced the most busheles for 1885.

FLAXSEED.

COMPARATIVE YIELD.

Year.	*Bushels.*	*Acres.*	*Average Bushels per Acre.*
1885	132,181	17,767	7.4
1884	185,227	28,166	6.5
1883	156,181	24,653	6.3
1882	562,270	. . .	.
1881	376,587	. . .	.

The principal flaxseed-producing counties of the State for the year 1885:

County.	*Bushels Produced.*	*Average Bushels per Acre.*
Randolph	15,951	9.6
Newton	14,712	7.8
Wayne	12,166	9.03
Huntington	10,697	7.03
Grant	8,003	6.1

Counties in the State producing the largest number of bushels to the acre, 1885:

County.	*Bushels Produced.*	*Average Bushels per Acre.*
Elkhart	812	13.3
Cass	1,196	11.9
Noble	180	10.0
Ripley	290	10.0
Starke	130	10.0

The flax crop for 1885 shows the smallest acreage and the largest average number of bushels seed to the acre since 1882. Elkhart heads the list as a flax-producing county, while Randolph produced the largest amount of seed.

HAY, TIMOTHY AND CLOVER.

COMPARATIVE YIELD.

Year.	*Tons.*	*Acres.*	*Average Tons per Acre.*
1885	3,610,606	2,420,056	1.4
1884	3,448,202	2,155,337	1.59
1883	3,459,656	2,106,938	1.6
*1882	1,599,994	984,982	1.6
*1881	1,303,217	988,560	1.3

---

*Timothy hay alone.

The principal hay (timothy and clover) producing counties of the State for the year 1885:

County.	*Tons Produced.*	*Average Tons per Acre.*
Randolph	70,610	1.7
Wabash	69,491	1.7
Elkhart	65,009	1.5
Wayne	64,389	1.7
Gibson	63,330	1.9

Counties producing the largest average number of tons of timothy hay to the acre, 1885:

County.	*Tons Produced.*	*Average Tons per Acre.*
Union	7,270	2.
Fulton	15,380	1.96
Miami	20,234	1.95
Randolph	35,642	1.94
Howard	14,051	1.89

The hay crop in the State, for 1885, was not quite an average yield, when we consider the acreage, which was larger by 264,719 acres than ever before harvested. The little county of Union ranks first as a hay-producing county (averaging two tons), while Randolph produced the largest quantity.

POTATOES.

COMPARATIVE YIELD.

Year.	*Bushels.*	*Acres.*	*Average Bushels per Acre.*
1885	5,801,524	74,434	77.9
1884	5,969,461	87,484	68.2
1883	8,353,412	87,100	95.9
1882	7,264,830	72,934	99.6
1881	2,396,350	72,314	33.1

The principal potato-producing counties of the State for the year 1885:

County.	*Bushels Produced.*	*Average Bushels per Acre.*
Marion	229,815	80.1
Allen	219,005	80.6
St. Joseph	169,410	84.3
Marshall	149,445	95.9
Vanderburgh	142,090	81.9

Counties producing the largest average yield per acre, 1885:

County.	*Bushels Produced.*	*Average Bushels per Acre.*
Blackford	61,425	132.2
Gibson	41,540	120.
Delaware	116,380	116.
Union	20,700	113.
Henry	78,840	110.

The potato crop in the State, for 1885, was two and nine-tenths ($2\frac{9}{10}$) bushels per acre above an average for five years. Blackford ranks as the best potato-producing county, and Marion yielded the most bushels during 1885.

SWEET POTATOES.

COMPARATIVE YIELD.

Year.	*Bushels.*	*Acres.*	*Average Bushels per Acre.*
1885	183,928	2,552	72.
1884	142,429	2,509	56.7
1883	168,876	2,288	73.8
1882	696,245	10,506	66.2
1881	239,511		

The principal sweet potato-producing counties of the State for the year 1885:

County.	*Bushels Produced.*	*Average Bushels per Acre.*
Marion	24,955	100.
Warrick	16,120	110.
Spencer	13,065	70.
Benton	10,050	50.
Vigo	9,750	77.

Counties producing the largest average number of bushels per acre, 1885:

County.	*Bushels Produced.*	*Average Bushels per Acre.*
Knox	2,440	128.
Warrick	16,120	110.
Wabash	2,325	110.
Bartholomew	5,285	103.
Marion	24,955	100.

In sweet potatoes Knox county takes the lead, yielding the most to the acre, while Marion produced the largest number of bushels in 1885.

TOBACCO.

COMPARATIVE YIELD.

Year.	*Pounds.*	*Acres.*	*Average lbs per Acre.*
1885	18,404,475	24,386	754.7
1884	15,592,400	20,711	753.3
1883	7,706,110	13,092	588.6
1882	13,593,486	17,234	788.7
1881	6,565,677	13,624	481.9

The principal tobacco-producing counties of the State for the year 1885:

County.	*Pounds Produced.*	*Average No. lbs. per Acre.*
Warrick	6,096,750	814.5
Spencer	5,921,200	786.2
Switzerland	1,644,800	751.7
Pike	1,477,100	667.4
Dubois	1,141,600	669.1

The counties producing the largest average number of pounds to the acre, 1885:

County.	*Pounds Produced.*	*Average No. lbs. per Acre.*
Harrison	117,900	1101.9
Parke	17,000	1000.
Tipton	8,800	977.7
Vanderburgh	48,900	905.5
Warrick	6,096,750	814.5

The tobacco crop in the State is increasing yearly, and 1885 showed a production of nearly 3,000,000 pounds more than ever before, while the yield per acre was much above the average of former years. Harrison ranks as the best tobacco producing county, while Warrick reported the greatest production in pounds during 1885.

LIVE STOCK.

CATTLE AND HOGS.

Year.	*Total No. Cattle in State.*	*Total No. Hogs in State.*
1885	1,189,357	1,698,585
1884	1,112,373	1,967,901
1883	1,057,296	1,911,820
1882	1,110,623	1,655,379
1881	1,254,655	1,775,974

Counties having the largest number of cattle and hogs in 1885:

County.	*Cattle, Total No.*	*County.*	*Hogs, Total No.*
Allen	29,175	Montgomery	46,537
Jasper	20,876	Henry	3[illegible],870
Randolph	18,451	Grant	38,553
White	18,187	Rush	37,368
Hendricks	17,902	Hamilton	36,815

Counties in the State having the largest number of cattle, according to area, 1885:

County.	*No. of Cattle.*	*No. to Sq. Mile.*
Hendricks	17,902	45.9
Benton	16,815	44.5
Wayne	17,464	44.4
Delaware	17,578	44.3
St. Joseph	14,710	44.2

Counties having the largest number of hogs, according to area, 1885:

County.	*No. of Hogs.*	*No. to Sq. Mile.*
Fayette	23,115	109.
Henry	39,870	99.6
Hancock	29,547	96.2
Montgomery	46,537	92.3
Grant	38,553	92.2

The above tables show a slight increase in the number of cattle reported for the State during 1885, with a correspondingly large decrease in the number of hogs reported for the same year. This latter was probably due to the discouraging prevalence of so-called hog cholera in certain localities. Fayette County ranks first in the production of hogs, containing 109 head to each square mile of territory, while Montgomery produced the largest number in 1885.

In cattle, Hendricks County leads in the State with 45.9 head to the square mile, while Allen produced the largest number in 1885.

HORSES AND MULES.

Year.	*Total No. Horses in State.*	*Total No. Mules in State.*
1885	512,394	57,739
1884	510,957	51,318
1883	485,739	47,977
1882	493,881	48,515
1881	536,251	53,117

The counties having the largest number of horses and mules, 1885:

County.	*No. Horses.*	*County.*	*No. Mules.*
Delaware	14,146	Montgomery	4,414
Marion	10,220	Vanderburgh	2,436
Elkhart	9,612	Marion	2,061
Tippecanoe	9,404	Jackson	2,047
Montgomery	9,368	Posey	1,851

Counties in the State having the largest number of horses according to area, 1885:

County.	*No. Horses.*	*No. to Sq. Mile.*
Delaware	14,146	35.4
Marion	10,220	24.3
St. Joseph	7,795	23.6
Wayne	8,352	21.2
Elkhart	9,612	20.3

Counties in the State having the largest number of mules according to area, 1885:

County.	*No. Mules.*	*No. to Sq. Mile.*
Vanderburgh	2,436	10.1
Montgomery	4,414	8.7
Marion	2,061	4.9
Posey	1,851	4.4
Jackson	2,047	4.1

As will be seen above, the number of horses and mules reported in the State has gradually increased since 1882. Delaware County leads the State both in numbers and average number to square mile of horses, while Vanderburgh ranks first in number of mules to square mile of territory, and Montgomery as to largest production.

SHEEP AND LAMBS.

Year.	*Total in State.*	*Average to Square Mile.*
1885	1,295,495	36.
1884	1,508,713	42.
1883	1,497,362	41.
1882	1,595,148	44.
1881	1,146,556	32.

Counties producing the largest number of sheep and lambs, 1885:

County.	*Total Number.*	*Average to Square Mile.*
Montgomery	44,993	128.9
Steuben	44,074	133.5
Lagrange	43,126	111.1
Elkhart	36,078	76.4
Dekalb	33,985	91.8

There is a remarkable decrease in the production of sheep in the State reported for 1885, which is no doubt due to two main causes, viz: The low price of wool and the ravages of dogs. Montgomery County leads the State in the matter of sheep raising.

TIMBER LAND.

The total amount of newly-cleared land brought under cultivation in the State during—

Year.	*Newly-Cleared, Acres.*	*Timber Land, Acres.*
1885	144,189	4,379,759
1884	144,400	4,428,581
1883	175,961	4,466,462
1882	225,468	4,585,012

Counties in the State having the largest amount of timber land:

County.	*Acres.*
Harrison	99,995
Dubois	90,184
Washington	86,276
Allen	84,345
Jackson	80,591

Counties bringing under cultivation the largest amount of newly-cleared land during 1885:

County.	*Acres.*
Greene	7,942
Carroll	4,917
Wells	3,262
Grant	2,894
Pulaski	2,800

Counties bringing under cultivation the smallest amount of newly-cleared land during 1885:

County.	*Acres.*
Ohio.	189
Lake	278
Union	295
Dearborn	358
Scott	410

DRAINAGE IN STATE.

Year.	*Total Rods of Drain Tile.*	*Average No. of Rods to Sq. Mile.*
1885	17,402,784	488.
1884	14,958,347	416.
1883	11,487,814	319.
1882	9,824,297	273.

Counties having the greatest total number of rods of tile, 1885:

County.	*Rods of Tile.*	*Average No. of Rods to Sq. Mile.*
Wabash	640,189	1502.
Grant	637,027	1524.
Marion	629,665	1499.
Boone	623,892	1485.
Randolph	617,092	1389.

Counties having the greatest amount of drain tile in use according to area, 1885:

County.	*Rods of Drain Tile in Use.*	*Average No. of Rods to Sq. Mile.*
Howard	557,122	1888.
Hancock	559,623	1822.
Decatur	616,454	1657.
Grant	637,027	1524.
Wabash	640,189	1502.

COAL.

A comparative statement of the coal mined in Indiana for the past five years:

Year.	*Total Production—Tons.*
1885	2,375,000
1884	2,260,000
1883	2,560,000
1882	1,190,000
1881	1,771,336

The coal-producing counties of the State are:

County.	*No. of Mines.*	*Persons Employed.*
Clay	34	2,466
Parke	17	682
Vigo	15	570
Daviess	17	540
Fountain	17	394
Pike	17	367
Sullivan	13	291
Vanderburgh	5	245
Warrick	16	218
Vermillion	5	152
Green	8	144
Perry	16	132
Owen	7	115
Knox	3	86
Dubois	11	55
Spencer	8	30
Martin	3	15
Total	212	6,497

INDIANA SHORTHORN BREEDERS.

The Shorthorn Breeders' Association met in the rooms of the State Board of Agriculture, Tuesday, January 26, 1886, at 10 o'clock A. M., President Mitchell, of Gibson County, in the chair.

Mr. S. F. Lockridge, of Putnam County, offered the following resolution, which was adopted:

Resolved, That a committee of three be appointed by the President, whose duty it shall be to inquire into the expediency of revising the constitution.

The committee appointed were Messrs. Lockridge, Buckles and Wilhoit.

The following committee was appointed on finance:

Messrs. S. R. Quick, Columbus; Sankey, Terre Haute, and Christian, Indianapolis.

The President read his annual address, as follows:

PRESIDENT'S ADDRESS.

Gentlemen of the State Association of Shorthorn Breeders:

We again meet in annual convention, and it would be well for us to take a rapid glance at the past. This Association was organized in the year 1872, and has been holding annual meetings each year since, discussing such subjects as are of interest to us as breeders. Such has been the routine work of these meetings The membership has not largely increased. Now the question comes home to us with great force, Have we been doing all we could, since our organization, to advance the interest of Shorthorns in the State? This question, answered correctly, would show that we are doing very little to promote the interests of this noble race of cattle. Let us compare our work with the work of some of the breeders of other cattle, such as the Herefords and the Jerseys. They have their papers, advocating and showing up all the good qualities of those breeds, and putting them prominently before the people. This is one point that Shorthorn breeders lose sight of. If there is any paper making a specialty of advocating the Shorthorn interests, I am not aware of it, and I believe that if more money was spent in printers' ink it would soon stimulate the breeders of Shorthorns to more activity, and also popularize this breed with the farmers. The average reading farmer depends very much upon his agricultural paper for advice in live stock matters, and the Shorthorn breeders ought to see that the merits of Shorthorns occupy a prominent place in all of the agricultural papers, not only in the advertisements, but the Secretary of the Shorthorn Association ought to be paid by the Association, enough to at least compensate him for one day in each week, that day to be by him devoted entirely to preparing articles for publication in the agricultural press.

Again, when the Fat Stock Show at Chicago was introduced, did the Shorthorn breeders of the State do anything to win honors at this great show? Let us compare the action of the Shorthorn breeders with that of the Hereford breeders. In fact there is no comparison. The Hereford men have, by their action, given Indiana a prominent place among the States in the production of superior beef animals. If there were any Shorthorns shown at that great fat stock show by any of the Shorthorn breeders in Indiana, I am not aware of it. Here is another point that has not been used by us to give prominence to the Shorthorns. Why is it that the breeders of Shorthorns in this State will let the victory of the "battle of the breeds" go without contesting the ground inch by inch? Your foes, gentlemen, are worthy of your steel, and at every opportunity they are beckoning you to the contest. Are the Herefords better cattle, that we are not meeting them in the race for superiority? This brings me to the lessons of the fat stock show. The seeming victory of the Herefords, the past two years, may be accounted for in two ways: First, the great perseverance of the Hereford breeders; second, the Hereford is fresh, so to speak, from the fountain head—I mean by that that they have but lately left the hands of the English breeders, where great care and sound judgment has been exercised in the selection of breeding animals.

The Shorthorns have been bred many years, and I might say not all the time as carefully as they ought to have been. Have the lessons of the Fat Stock Show settled this question of merit as between these two breeds? Certainly not, because it is an admitted fact that a large per cent. of the best steers yet shown at the Fat Stock Show with white faces were out of Shorthorn cows. The Hereford bull seems to have the power to stamp white faces on all of his get, yet when you come to view the beautiful square carcass it certainly shows more of the form of the Shorthorn than the Hereford.

Another lesson of the Fat Stock Show is that, with but few exceptions, the best Shorthorn blood did not make its appearance at that great beef show. The reason for this is easily explained; good prices have been realized for bull calves as breeders, and none but culls or inferior animals have been altered, so the race thus far has been an unequal one. Have the Shorthorn breeders been hunting England and Scotland all over for prize animals to win a victory with? Why, no, and the Hereford men themselves seem tired of that kind of folly, and now impose a tax of one hundred dollars upon any one that repeats it. Then if my reasoning is correct what is our duty as breeders of Shorthorns? Will we yet slumber on, resting our security on the high sounding names of Dukes and Duchesses. The Shorthorn of the future must be the animal that comes the quickest and most profitable to the block. This is the court of last resort and from it no appeal can be had. Then in order to establish that superiority which the Shorthorns are entitled to the knife must be used more freely in order to bring the best blood into active competition as beef on the block. I believe that Shorthorn breeder ought to "steer" each year several of his best calves, give them liberal feed from calfhood up, and when he starts out to the fairs in the fall take a couple of good ones along to show the farmers the kind of steers the Shorthorns produce. This will be an object lesson that can't be taught in the showing of high-fed females; a lesson that will do more to win favor for the Shorthorns than anything else. One more point: have the Shorthorn breeders been banding themselves together and piling up money to make a successful exhibit at the Fat Stock Show? To some extent this has been done, but have we in Indiana done our duty in this respect. The old saying applies right here, "money makes the mare go." If the Shorthorn breeders expect to win success in the future they must adopt a liberal policy by assisting those who are willing to win victory for you and for me. The prices of Shorthorns during the past year have not ruled as high as in years gone by, but this is no cause for any slackening of interest in Shorthorn breeding, for if we view the commercial field over we find all business more or less depressed, and it is a wonder under the stringency of money matters that sales were as successful as they have been; but this fact shows that the Shorthorn has a firm hold on public favor amongst farmers. During the summer and fall of 1885 the cattle interest of our State was threatened with pleuro-pneumonia from infected districts, but more especially from our neighboring State of Kentucky. During the early fall this dread disease appeared in a very virulent form near Cynthiana, Ky., and so pronounced was the disease that the citizens in that immediate neighborhood met and destroyed a herd to prevent its further spread. When this occurred a number of the cattle breeders, and especially the Shorthorn breeders, appealed to the Governor for protection of the cattle interests of the State. The Governor, appreciating the situation, issued a quarantine proclamation to take effect at once. This quarantine proclamation was issued on the 10th day of November, 1885, and still remains in force. As we, the breeders of Shorthorns, were directly interested in asking the Governor to quarantine our State I deem it our duty now to again give expression as to the advisability of continuing the quarantine proclamation. Another point I desire to call your attention to, and ask an expression on from this body. Is the system of judging at the fairs giving general satisfaction? The three-judge system is generally adopted, that is, two of the judges do the voting, and if they agree the award is made, but failing to agree the third judge, or umpire, places his vote with one or the other of the judges, thus making an award. I believe I am justified in saying that the managers of fairs are always anxious to have expressions from breeders of fine stock on questions of such vital importance to them. In conclusion, gentlemen, allow me to return my thanks to you for the high honor you conferred on me by selecting me to preside over your deliberations. If I have made mistakes I can assure you that it was not done willfully to injure or offend any one.

The address was referred to Messrs. Nelson, Wilhoit, Lancaster and Lockridge.

AFTERNOON SESSION.

The convention met, President Mitchell in the chair. There were twenty-three accessions to the membership roll.

Mr. E. S. Frazee, Treasurer of the Association, submitted his report, which was referred to the Finance Committee.

Mr. Thomas Wilhoit, of Middletown, offered the following scale of points on "Standard of Excellence:"

Rump, level with good length and breadth	6
Thighs and twist, full and well down	5
Hips, broad, level and well covered	5
Flanks, well let down and full	3
Loin, broad, level and meaty	8
Ribs, fleshy and broadly sprung	7
Crops and chine, well filled, meaty and no depression	9
Heart-girth, full and large	9
Shoulders, smooth and well covered	4
Brisket, well let down and forward, with little or no dewlap, broad between fore legs	3
Neck, clean and tapering	2
Horns, medium sized, clean, tapering and well formed	1
Ears, medium size, fine and lively	1
Eyes, mild, but full and bright	2
Head, clean and fine, masculine in bull	2
Bones and legs, fine and shapely, short	6
Tail, well set on, tapering and fine	2
Hair, abundant and massy	2
Handling, mellow, neither soft nor unyielding	6
Skin, fine, elastic, loose and medium thickness	2
Upper line, level and straight	4
Lower line, low down and even from brisket to twist	3
Weight—For age of bull, on basis of 1,000 pounds at twelve months, 1,500 pounds at twenty-four months, 2,000 pounds at thirty-six months, 2,200 pounds at forty-two months; females, 850 pounds at twelve months, 1,200 pounds at twenty-four months, 1,600 pounds at thirty-six months, 1,800 pounds at forty-two months	4
Symmetry, smoothness, style and general attractiveness	4
Total	100

DISCUSSION.

Judge Buckles, of Delaware County. If we adopt a standard in Indiana we would like to inquire what is Mr. Wilhoit's standard, as compared with others? There are different standards; if this embraces substantially what we should have as a standard, it should be referred to a committee.

Thomas Wilhoit. That varies a little in some points. I have some higher than others. The crops and joint is the most important point in the beef; it helps to embrace constitution. That and the girth around the heart are the two hardest points to fill. We can not have a fleshy animal without constitution, and I have placed that above the other two. The loin is a valuable point. We must take the valuable points and place them the highest. The high-priced beef lays around the heart. The flank is nice, but shows a small point. The twist and hip is a good point, which is up to six.

Judge Buckles. It is not my purpose to find any fault as to the position taken by Mr. Wilhoit, although it occurs to me that the weights are a little high. I suggest that it be referred to a committee for consideration.

Weller Smith, of Indianapolis, moved that a committee of three be appointed to confer with other State committees.

S. F. Lockridge, of Putnam County. There are many standards of excellence throughout the country. I think the committee should have time to investigate this thoroughly and compare with other States, and make one standard that is satisfactory to other States. If we can have a committee of conference to assemble in Chicago during the Fat Stock Show, and hold a joint meeting with other States and discuss the different points and select one standard for the whole country, it would be best. I think it would be right for this association to appoint a committee to confer with similar committees from other States in a joint meeting.

Robert Mitchell, of Gibson County. I think you should draft a resolution, with a short preamble. Breeders all over the State have to be consulted in this matter. The secretary can confer with other States, and, if to meet in National convention was expressed as the sentiment of this body, it would have considerable weight in this matter.

S. F. Lockridge. If I understand your proposition, you want this committee to select a standard now, and put before the committee of other States. My idea is to select from all the standards, and after consultation with the various committees of the several States select a general standard that will do all over the country.

W. J. Quick. Every State association in the United States have met in annual meeting, except this and Wisconsin. It would be impossible to write to them and let them know what we have done until next year.

Thomas Nelson, of Parke County. I wish then to submit an amendment that it be a committee of conference, to confer with similar committees from other States, and adopt a national standard of excellence and points.

Prof. W. C. Latta, Purdue University. It seems to me you would be likely to thwart your own objects. Those associations, as Mr. Quick has suggested, have met; they will not have an opportunity to take part in this matter. I presume there will not be many such committees that your committee could confer with. If it is important to have a standard of excellence in Indiana at once, I do not see why you should not pass on it now. If we do not give other State Associations an opportunity we should meet with opposition and fail in the purpose we had in view. If it is desirable to have some standard at once we can have one for the State until we shall have a uniform standard for the nation.

Judge Buckles. There need not be any trouble about that; the other associations meet before ours and we can consult them and get their advice and our committee report at the next meeting in the form of a recommendation.

S. F. Lockridge. The National Association has not adopted a scale of points, if I am not mistaken.

W. J. Quick. I think they have adopted a standard of excellence, and if so, it is hardly necessary to open a question that the National Association has decided. We look to the American Herd Book for our authority.

Thos. Nelson. It is very desirous that we should proceed right on this subject. One of the reasons is, Indiana took the first step in holding a Shorthorn Association. If the convention is not ready to act in this matter I move that the subject be laid on the table for further consideration.

J. Sankey, of Vigo County, read the following paper on

VALUE OF SHORTHORNS OVER OTHER BREEDS.

The subject assigned me by the committee would seem to indicate that breeders of the "red, white and roan," are an arrogant set of fellows, not content to be classed as equals with our neighbor breeders, who are rearing different strains of cattle, and claiming for them all that the most enthusiastic admirer of a Clarence Kirklevington or a Cleveland and their compatriots would claim for them. The "Value of Shorthorns Over all Other Breeds of Cattle" is a question that may or may not be easily answered. If we say as milk-producing stock they are the best, our Jersey and Holstein friends would immediately deny the allegation, and ask us for records that would equal or surpass those of Mary Ann of St. Lambert, or Mercedes. If we say they are the best beef breed reared, then our White-faced and Black Muley friends will be ready to cross swords with us and contest the ground like chivalric knights of old, and on this ground we are ready to fight the battle. But the question arises, do Hoosiers wish to raise cattle which produce milk and butter, or beef only? Is it not better that the farmer and stock raiser of Indiana should raise a breed of cattle that are fair milk and butter-producers, and the best beef-producers in the world? That these two qualities are combined in the Shorthorn to a greater extent than in any other breed of cattle, we are ready to maintain. In the discussion of the subject of agriculture by the authors of Encyclopedia Brittanica, after comparing ten distinct breeds of cattle, reach this conclusion: "The large low-land cattle thus claim our first attention, and amongst them we can not hesitate in assigning the first place to the Shorthorns."

Early history is wonderfully silent on the subject of agriculture, and gives no data as to the improvement of live stock like the periodicals of modern times from which to make comparisons, or trace the genealogy of tribes or families. We are informed that about the year 1700 the people of Europe began improving their cattle, and the kind on which they commenced are described "as of extraordinary size, had coarse heads with *short horns,* heavy necks, high, coarse shoulders, the hips wide, the rumps long, and the thighs thick." These cattle were good feeders, made heavy carcasses, and the cows were good milkers. These were the parent stock from which all Shorthorns descended. And while emphasis is given to their beef-producing qualities, the cows were accorded the merit of being "heavy milkers." These cattle in the hands of the Colling Bros. were improved by careful breeding until they lost all their coarse, ungainly appearance. From all the accounts we have been able to gather, the cows of that day were good milkers, and when done breeding would make heavy carcasses of beef. * * Mr. Bates, in a letter written in 1842, says of the Stanwich Duchess cow: "She was kept on grass only, and made in buttermilk for some months above two guineas per week." Again, speaking of Duchess 34th, Mr. Bates says: "She was a remarkable cow both as a milker and in exceeding symmetry of her form." Thus we think it would appear that the early history of the Shorthorns will establish their character and excellence as milkers. At the London Dairy Show of recent date, the prize was awarded to a pedigreed Shorthorn cow, as the best milker, where over one hundred cows of various breeds contested for the honors. A gentleman of Ohio finds it profitable to run a dairy composed of fifty Shorthorn cows, and yet we are told in the face of this evidence that while the Shorthorn may be a good beef breed, they practically are of no use as a milk breed. I believe it will be generally conceded that Western breeders pay little or no attention to the milking qualities of the Shorthorn, but does that prove that as a breed they are non-producers of milk? Many men allow their mares to run on pasture and raise their foals without being broken to work, but does it follow that these mares could not be trained to work?

Thus, we see, in looking over the history of the Shorthorn since they were first recognized as a race or tribe on the Teeswater, that they have been placed in the front rank as the best breed of cattle. In proof of their superiority as a beef breed, we may instance some of the tests at the recent Fat Stock Shows at Chicago. Take the exhibit of 1884: Hoosier, the best specimen of his breed, was 1,389 days old at time of slaughter, weighed 2,030 pounds; while Clarence Kirklevington, seventeen days younger, weighed 2,370 pounds, or 340 pounds more than the whiteface. The former gained 1.49 pounds per day from birth, while the latter increased at the rate of 1.74 pounds per day. May we not fairly presume that both bullocks were fed to their utmost capacity? Again, take the two best grades exhibited at the same time, Charlie Ross and Benton's Champion, and we see that the difference is in favor of the Shorthorn grade. While we have to admit that the Shorthorn did not fare so well at the Fat Stock Show of 1885 in the grade ring, and the grand prize was secured by Regulus, there is some consolation in the fact that it is the first time, and that our Cleveland was the best yearling of any grade or breed in the hall. But why cavil about breeds? There is room enough in Indiana for all the pure-blooded stock that may come, of whatever kind. Let us rather turn our attention to educating Hoosiers to believe a fact that it will not pay to raise scrub stock of any kind.

DISCUSSION.

Judge Buckles. It is an excellent production and the ideas presented accord very much with my views on the subject.

Prof. Latta. I would be glad to have something of an expression of the sentiment of the convention as to this question of rearing Shorthorns that will combine with the beef, the milking qualities. Shall we grow this breed of cattle especially for beef or combine the two qualities? It is an important question and should receive our earnest consideration. I have heard some say that it was not worth while to seek to compete with those champion milkers. Let us make them all true animals in that respect. It may be a possible topic for you to dwell upon.

Hon. E. S. Frazee, Rush County. Some families of the Shorthorn breed are poor milkers while others are not. To make one of those good milkers it is important they should have their first calf in May or June. Have good pasture and keep her in milk up to six weeks before calving. In the winter they should have plenty of clover hay, chopped oats and bran. A cow fed on such feed will make plenty of butter. The Shorthorns are the best for beef and excellent milkers.

Mr. Zeike. It should be the purpose of breeders to develop the milking qualities, as well as the beef, and make a general purpose cow. I think it can be done, and we are trying hard on our farm in that direction.

Mr. Moulton. I have a Shorthorn cow that gives seven gallons of milk in a day. She raises a calf every year. Her sister weighed two thousand pounds, and scarcely gave milk enough to raise her calf. I think it was caused by being four years old before calving. We should raise good cattle if we aim to maintain the milk and butter qualities. It is not every one who can keep a large number of cows, and for this reason we should not lose sight of this combination of beef and butter. I have a Jersey which makes plenty of butter, but the milk is worthless after the cream is removed, while the milk from the Shorthorn is good and yellow after skimming.

Mr. Frazee. The Kitty Paines were splendid cattle. Young Mary was also good, while a few others are not quite so valuable.

Prof. Latta. Perhaps my question was not fully understood. Would it be amiss to take a vote on this? There are some here who perhaps would favor the Shorthorn as a dairy animal; whether we shall increase the milking qualities, and make them suitable for dairy purposes, something like the Holstein, or for beef only. A vote would show the sentiment of the convention.

G. W. Thomas, of Rush County. If we raise more of the butter-producing qualities of the cow I do not think we will lose anything by that, as butter generally commands a good price. I hope this Association will take action in reference to the essay just read. Our vote should be, if taken, for a combination cow; when she is dry she will make more beef than any other; after that add the milking qualities and we add to the value of the race of cattle. I would like to have this question more fully discussed, so that we who are younger may learn how to produce those milking qualities faster and know what families to cross in bringing our cows to the front as milkers, as well as for their beef qualities.

Mr. Huddleston. I am in favor of a general purpose cow. We can not do without her any more than we can do without our general purpose horse, and we can not afford to have so many different classes of horses in this country.

Thomas Wilhoit. I am in favor of a general purpose cow, and in favor of feeding well and getting an abundance of milk.

Mr. Pusey. I will go on both sides of that question. When we try to bring them to the highest standard of excellence for both beef and milk we find we can not develop beef to the highest quality in the general purpose cow.

Mr. Mitchell. It is a fact that the dairy men are pressing that on the minds of the people that the Shorthorns are not adapted for milking purposes. I want some of us to make a test during the next year with the Shorthorns in this respect and see what the result will be.

The following resolution was offered by Prof. Latta and adopted:

Resolved, That the Shorthorn Breeders of Indiana believe it desirable to maintain the milk function of our cattle—in short, to breed cattle combining in high degree both beef and milk qualities.

Judge J. S. Buckles, of Muncie, read the following paper on

NECESSITY AND VALUE OF LOCAL EFFORT.

The discussion of the subject assigned me by the Committee on Programme may involve more difficulty and responsibility than I at first anticipated.

This Association is said to be one of the oldest of the kind in the West, and what I may feel called upon to say with reference to its past success may possibly be construed to be a purpose to question the wisdom or good faith of those that have gone before us. In justice to myself and them, allow me in advance to disclaim any such design and avow my sole object to be to contribute my mite, however small, toward bettering the condition and promoting the influence and power of the Association in the near future.

The mission of the Shorthorn men of Indiana embraces more, in my judgment, than the act of raising a few calves and obtaining a fair price for them. The plane that ought to be occupied by this Association is a higher, broader and more comprehensive one than is sometimes indicated by the petty jealousies of each other and of rival breeds of stock. We are citizens of Indiana, and as such should, in our organized capcity, look to the advancement of the interest of the farmers of the State as well as our individual profits.

We have to-day, perhaps, about 600,000 cows in Indiana, and about 200,000 two-year-old heifers, aggregating 800,000 cows and heifers to be bred the coming year. Now, suppose those cows and heifers are bred to thoroughbred Shorthorn males of even medium quality—would any Shorthorn breeder hesitate a moment in affirming that each calf so bred would be worth, at one year old, at least ten dollars more than if bred from a scrub bull. I think I may safely extend the inquiry to the friends of other breeds of improved cattle, and with safety assume their answer to be as favorable, pecuniarily, as I have put it. Upon this theory, then, we may add to the wealth of the State, by one year's breeding by thoroughbred Shorthorn males, an amount sufficient for building and furnishing our new State House, and pay the ordinary and legitimate expenses of the State Government for the year thus devoted to the good of the public. To serve this number of cows would, perhaps, at the lowest estimate, require from 16,000 to 20,000 bulls. To furnish that number would be worth, to Shorthorn breeders, at a low estimate, $1,000,000 That amount of money would seem to be worth an effort on their part, especially when that effort would result in a corresponding benefit to the farmers of the State by largely increasing its aggregate wealth.

It may be said that this estimate as to the number of calves is extravagant, for the reason that a large number of them would not live to be one year old.

This may be true, and perhaps it is equally true that no greater number of them would die than if bred from native bulls. It might be suggested, that no allowance has been made for the thoroughbred and grade cows included in the estimate of the number in the State.

I think it safe to assume that the thoroughbred and high grade Shorthorns in Indiana will not exceed ten per cent. of the whole number of cattle, and that well informed persons entertain the opinion that they will not exceed seven and a half or eight per cent.

But admitting for the sake of argument the truth of all these suggestions, so far as they have the semblance of truth, we still find indelibly impressed upon the face of the cattle breeding interests of Indiana the fact that from some cause it has been sadly neglected.

This neglect has not been confined to cattle breeding alone, but has extended to horses and sheep as well. It is true that we have as good stock in Indiana as is to be found elsewhere, but unfortunately for us, as farmers and stock breeders, the good ones are the exception and not the rule, as they should be.

If this description of the condition of the live stock breeding in our State is not an exaggerated one, or even approximates the truth, then there is a pressing necessity for effort of some kind with ample room for progress in the interest of Shorthorn breeding. If room for progress, how is that progressive or advanced position to be attained by us? Some say by the State and county fairs and their exhibits. Others say by fat stock shows and their exhibits, and still another class, equally as credible, say by the live stock journals published at the great commercial centers. I concede, Mr. President, that the State and county fairs, the fat stock shows and the live stock journals are all valuable, and to some extent effective weapons in the hands of the progressive live stock soldier. But the trouble in relying upon them exclusively is that they are not sufficiently effective. Their power, whilst great in certain directions, is not sufficiently great; it does not reach far enough and quick enough to answer our purpose in this progressive age, as I think we have discovered to our injury as a State.

I assume that there is in Indiana something more for Shorthorn breeders to do than to fatten a calf and exhibit him at a few fairs; fatten a steer and take him to the Fat Stock Show, and then, after having performed both these daring feats, go home, read his live stock journal, and solemnly resolve that the Shorthorn is just the thing; that it excels by all odds all other breeds, and last, though not least, in his estimation, that the particular Shorthorns bred by him beat the world, and would have carried off the first prize wherever exhibited, if it had not been for the ignorance or dishonesty of the awarding committee, and then console himself with the further reflection that the public has lost more by the failure than he.

It has been well said that what is worth doing is worth doing well, and to do a thing well it must be done effectively. The thing necessary to be accomplished is to reach the ear and judgment of the average farmer of Indiana. The methods heretofore resorted to have signally failed to accomplish this object. How can it be legitimately done, and in the least time, is the question our action must answer, or our organization continues to be a partial failure, and in process of time that partial failure will become a complete one.

The average Indiana farmer is not reached by the fat stock shows, because he does not, to any great extent, give them his patronage; he is not, to any perceptible degree, converted by the show of fine-blooded stock at the State and county fairs, for the reason, in part, that there are so many other attractions at those exhibitions that he does not have time and, perhaps, but little inclination to devote what time he has to examining and studying the valuable points of the improved Shorthorn, or improved breed of any other kind of cattle. In other words, he is not inclined to combine business and pleasure in that way, and perhaps never will be, unless something is done to impress upon his mind the necessity for him of such combination. It is claimed that the reading of the *Breeders' Gazette*, the *National Live Stock Journal*, or other live stock journals of equal standing, will, in time, accomplish that object. This I concede, but in that we encounter the difficulty that he does not read those journals, and will not subscribe for them for the reason, as he will tell you, that he is a plain farmer, and not a fancy live stock breeder; that he reads his county papers and one or two agricultural journals, and that is enough for him.

If it is necessary for the Shorthorn breeder, as well as the farmer of Indiana, that the farmer should feel an active working interest in the improvement of live stock, that interest is yet to be generated in their minds, notwithstanding the influence heretofore exercised by the State and county fairs, the live stock journals, the fat stock show and the State Shorthorn Breeders' Association.

Can it be done, and how? Not easily, I admit. Our past experience proves that it will not do itself, even with the aids heretofore volunteered.

I have no doubt it can be done to the extent, within fifteen years, of removing from Indiana every scrub cow in it. When the scrub cow has been removed by the intelligent agricultural breeder and improver of live stock, you may expect a corresponding improvement in all the live stock to be found on his farm.

It can be done by each member of this Association resolving himself into a committee of vigilance, with full power and will to do all that can legitimately be done to accomplish the object, and by careful investigation ascertain the best methods to be used, and then use them effectively.

We may, and doubtless will at first, differ with reference to what the best methods are, but let us adopt the most effective and speedy ones we can find, and when a method is adopted, work it with a will in season, and, if necessary, to attain the end desired, it might be worked a little out of season.

As Shorthorn breeders, we are largely interested in the improvement of the live stock of the State—not cattle alone, but all kinds of live stock that tends to the betterment of agricultural habits and profits. Inasmuch, then, as all business success depends so largely upon the success of agriculturists, by what means can we most readily reach and thus enlist the influence and coöperation of this class, of which we constitute a small part?

After having given the subject some thought, for the purpose of arriving at something like a practical conclusion, this method has suggested itself to my mind:

1. Let the State organization remain substantially as it is for the present, with such modifications as are hereinafter suggested.

2. Organize county associations if possible in every county in the State.

3. In each county, procure a department in the leading county paper for live stock and its improvement, to be called the live stock department, edited by a live, active member of the association, assisted by the suggestions of other members, and each member use his influence in extending the circulation of that county paper. Let the selection of a paper be made without reference to its political complexion, but with reference to its usefulness to live stock improvement alone.

4. The business of the associations at their meetings to be mainly the reading and discussion of essays upon the improvement of live stock, the methods of agriculture, and such other questions upon those points as may from time to time be presented by members. Have the proceedings of each meeting, including the essays and discussions, published in the live stock department of your county paper. Have these meetings either monthly or quarterly, as may be agreed upon.

5. Where thought advisable, let the county associations embrace agriculture as well as live stock. Where that is done, it would perhaps be expedient to divide the labor of the association into different departments, say a department on agriculture, on horses, cattle, sheep and swine, the interest of each department to be managed by a committee of its own selection, and the Committee on Programme to consist of one member from each department to be selected by the several departments; and for the purpose of meeting ordinary expenses, let an admission fee be paid by each member; say fifty cents, or such amount as may be fixed.

6. Have the by-laws or constitution (whichever may be necessary) of this association so amended as to entitle each association to membership in this association by paying the admission fee paid by other members, and to representation by one delegate.

7. After the county associations have been formed and are in proper working order, if thought desirable, organize district associations, to be composed of delegates from the various county associations, to meet at convenient points once or twice a year, and at these district meetings have addresses or essays delivered by distinguished live stock men and agriculturists, and discussions follow as in the county organizations

8. Last, though not least, this association procure of the *Indiana Farmer*, or some other weekly paper published in this city, space for a live stock department to be edited in the interest of live stock improvement by some person selected by this Association. and publish in full in that department the proceedings and essays of this Association immediately after each annual meeting, and have that copied into and published in the live stock department of each county paper that furnishes a live stock department to a county association.

It has not been my purpose to say much with reference to details in organizing and managing these associations. That can be more satisfactorily done by persons making the organizations.

It may be said that this plan embraces or may result in too great a commingling of interests to be successful for Shorthorn breeders.

The important element in the successful introduction of improved live stock is to have a demand for improvement. When that demand is generated, if the Shorthorn breeders are unable to show that their favorite is the best improvement in cattle for the Indiana farmer, then let them gracefully yield to the friends of some other breed.

What method is best calculated to generate that demand in the shortest time consistent with the interests of those to be affected? I concede to be a debatable question.

The plan suggested is not intended to supersede any of the legitimate means heretofore in use but to be supplemental thereto. By this method, if carried into effect as it can be, if engaged in with a determination to succeed, we will in a comparatively short time have from fifty to seventy-five weekly county newspapers in the State talking to farmers every week upon the importance of live stock improvement, and monthly or quarterly the essays and discussions of county associations upon the same subject that the farmer may either listen to or read in his county paper, supplemented by weekly discussions of the same subject in the *Indiana Farmer*, and the opportunity of reading and reflecting upon the essays and discussions of the State Shorthorn Breeders' Association.

I do not claim that this is the best or most effective method that can be devised, but that to my mind it presents a solution of the difficulty under which we labor, promising better results than any other I have been able to think of. That something should be done in the direction indicated I think all will agree. If the plan suggested is not the best under the circumstances let the best be suggested and at once put into practice.

Shorthorn interests have, I think, advanced some in Indiana within the last year, and now perhaps occupy a position that with effective effort their course may be made onward and upward, that without such effort it will be backward and downward to utter ruin, as it ought to be, so far as we are individually concerned, if by our carelessness and indifference we prove to the world that we are incapable of administering the great trusts reposed in us.

DISCUSSION.

W. J. Quick, Bartholomew County. I fully coincide with the gentleman in reference to county associations. We have had in our county some experience. We organized an association some eight or ten months ago. It has grown to quite an extensive association. Our county paper published the time of the meeting, and most of the proceedings of the meeting. Up to the time of our organization only two or three persons were engaged in breeding Shorthorns. Since that time there is a lively interest in Shorthorn breeding. There have been two sales in the county since the organization, one late this fall. At the first sale there were about thirty head sold, and at the last sale forty head, most of which remained in our county, which shows a lively interest in the Shorthorn breed of cattle, and we think our little association is the cause of this. Quite a number have engaged in rearing Shorthorn cattle, beginning in the last ten or twelve months. If we would organize in every county, Indiana would soon lead any State in the Union for Shorthorns.

S. R. Quick, Bartholomew County. Hardly any of our farmers can bear the idea of paying $100 for a calf, but when they attend these county meetings they soon get educated up to think $100 is not too much. I have been in the business for twenty years, and never sold many in Bartholomew County until within the last few years. There is a man sitting here under my voice who, two years ago, would not think of buying a Shorthorn at any price, but would buy a Holstein. This last season he bought a Shorthorn and paid $300 for her. This gentleman says to-day there is more money in Shorthorn cattle than in wheat or corn. If you have a few energetic men to go ahead, others will come in and be interested. Whenever you get them to come and listen you soon educate them up to that point, which is the only way it can be done.

Col. Gault, Lafayette. I am here to be instructed by you Shorthorn breeders. My business is more particularly selling cattle. I have been called on at different places to sell cattle. In our county we have got a "boom" on the Whiteface. I believe the question was before the convention a while ago relative to the milking qualities of the Shorthorn, and there seems to be a point to decide—whether we should lose sight of the beef and take the milking qualities. If we compete with the Herefords we have got to let the milk go and take the beef. I had, last spring, some thoroughbred Herefords in White County, and some Shorthorn cattle. I sold the male Hereford at $102. He was a little aged and blind in one eye. Last fall I was called into Newton County to sell some high-grade Hereford cattle, with a few Shorthorns. I went over and the market was down flat. I sold some Hereford grade heifers, which brought from $22 to $32. I had a Shorthorn put in with them, and it went up to $48.

S. R. Quick. Colonel Gault is a little off when he speaks of dropping the milking qualities. We are well aware we must have the milk to make the calf, and we can not make a full-grown beef unless we have the milk to sustain the calf. We won't make it. We have got both beef and milking qualities in the Shorthorn, and we should maintain them.

Colonel Gault. An uncle of mine some time ago bought a Hereford bull for $500, and now he is wanting to buy some Shorthorn heifers to improve his herd of Herefords.

W. F. Gordon, New London. If we want to sell our calves, we should feed them besides letting them suck; by doing so, we will get good prices. I have no trouble in selling my calves, and I always get fair prices. I always make it a point to take good care of them. If you buy a Shorthorn calf and turn it out in the road without a sufficient amount of feed, it will soon run down until it will soon look like a scrub.

Mr. Cotton. As Judge Buckles remarked in his paper, what course are we to pursue as farmers and breeders of live stock throughout this country? Do we intend only to permit the young and rising farmers that start in the honorable pursuit of tilling the land and bringing out what the Lord has put there for its development, and what course we are to pursue to rest his mind and think what is his duty to-day? I certainly think it is practical to organize. Let us come together, not only as county, but as township, organizations, and have a suitable paper prepared and read on the excellency of the Shorthorn, another on the horse, and still another on the cultivation of swine and poultry. When we come together we know how to enter into each other's feelings. There is too much of a disposition to go away from home to buy fine stock, when we can, by a little exertion, have just as good stock in Indiana as can be found anywhere. Just to think of the millions of dollars to this great country derived from the products of the soil! We have got a surplus of cereals, and we have got to resort to something else. We should consider the profitableness of raising stock, and it is a great problem, what will in the future be most remunerative for our time and services? Gentlemen, the Shorthorn is a splendid animal. I have forty-five head, and I like to look at and feed them. It is our duty to use our influence and induce young farmers to take hold of this enterprise. We have already accomplished a great deal of which we will be proud in the near future.

Mr. Strange. What preparation ought to be made for feeding to get the best results? There is a science about preparing feed for cattle.

Mr. Hudleston, Rush County. We have had an organization in our county for the past two years, and think it has done good. It is not especially devoted to the Shorthorn interest, although that is discussed. It is an association of general interest to the farmer. Sometimes we have a paper relative to the swine interest, another to the horse, still another to the cattle, etc.

Judge Buckles, Delaware County. Each member who feels inclined to speak should speak freely. There will be a proposition before the Association before adjournment, to carry out this subject. I would like, before this proposition comes up, to have a general expression on the subject. If that is not what should be done, let us know what the views of the people are.

Mr. S. F. Lockridge, from the committee appointed last year on reorganization of the Association, submitted the following report:

Mr. President:

Your committee appointed last year, under the resolution of Judge Buckles, to consider the propriety of reorganizing this Association upon a more effective basis, etc., etc., beg leave to offer the following report:

The committee have made arrangements with the Indiana Farmer Company for a department in their paper, to be devoted to the interests of the breeding and improvement of Shorthorn cattle in Indiana, to be edited by the Secretary of this Association, or such other person as may be selected by the Association.

In regard to the second proposition of the resolution, the committee suggests that the Secretary of the Association be instructed to issue a printed circular to each Shorthorn breeder in the State, requesting him to forward to the Secretary the number of cattle in his herd, the name and number of the sire or sires in use, and in case the postoffice address of breeders is not known to the Secretary, that the circular be sent to the Secretary of the county agricultural society, and in case there is no such organization, to the County Auditor of such counties as have not responded, with the request that he procure and forward to the Secretary of this Association, a list of the breeders of Shorthorn cattle in his county, together with the number in each herd, and sire in use.

The committee further report that the plan suggested by Judge Buckles in his essay read at this meeting, for reorganizing this Association and making it more effective in the future, meets our approval, and we hereby insert the following as a part of our report, and recommend its adoption as the rule of action for the future:

1st. Let the State organization remain substantially as it is for the present, with such modifications as are hereinafter suggested.

2d. Organize County Associations, if possible, in every county in the State.

3d. In each county procure a department in the leading county paper for live stock and its improvement, to be called the live stock department, edited by a live active member of the Association, assisted by the suggestions of other members, and each member use his influence in extending the circulation of that county paper. Let the selection of a paper be made without reference to its political complexion, but with reference to its usefulness to live stock improvement alone.

4th. The business of the associations at their meetings to be mainly the reading and discussion of essays upon the improvement of live stock, the methods of agriculture, and such other questions upon these points as may from time to time be presented by members. Have the proceedings of each meeting, including the essays and discussions, published in the live stock department of your county paper. Have these meetings either monthly or quarterly, as may be agreed upon.

5th. Where thought advisable, let the County Associations embrace agriculture as well as live stock. Where that is done, it would perhaps be expedient to divide the labor of the Association into different departments, say a department on agriculture, on horses, cattle, sheep, and swine, the interest of each department to be managed by a committee of its own selection, and the committee on programme to consist of one member from each department to be selected by the several departments, and for the purpose of meeting ordinary expenses, let an admission fee be paid by each member, say fifty cents, or such amount as may be fixed.

6th. Have the by-laws or constitution (whichever may be necessary) of this Association so amended as to entitle each Association to membership in this Association by paying the admission fee paid by other members, and to representation by one delegate.

7th. After the County Associations have been formed and are in proper working order, if thought desirable, organize District Associations, to be composed of delegates from the various County Associations, to meet at convenient points once or twice a year, and in these district meetings have addresses or essays delivered by distinguished live stock men and agriculturists, and discussions follow as in the county organizations.

Your committee would respectfully recommend, if the propositions herein suggested are adopted by the Association, that each member use all honorable means to put said plan in successful operation in his respective county.

All of which is respectfully submitted.

Robert Mitchell, Chairman.
S. R. Quick,
S. F. Lockridge,
I. S. Buckles,
Thomas Nelson.

The report of the committee was concurred in.

Judge Buckles. I am a little fearful we have not discussed this matter sufficiently to carry the impression home to our neighbors of the *absolute* necessity of taking hold of this subject and working it up. It is just as we make it. We may talk about the Hereford men getting ahead of us, but the only reason is because they have the nerve to accomplish that purpose. It is not because they have better cattle; they don't have them. In Indiana the large farmers are an exception; not many have over a quarter or half-section of land. It is important that the holder of small farms should have as good stock as the larger. As was stated in the paper, a majority of the agriculturists of Indiana don't read a live-stock journal, and do not attend fat stock shows or know the result of them, and we must teach them by example and exhibit stock and show their good qualities. Every member of this Association should feel called upon to take hold of this matter in his county and work it up, keep an organization in working order, and to do this he must take some pains. It don't make any difference whether they are all Shorthorn breeders or not. It is that class of men who are not in the pale of live stock improvement that we want to convert. If you can not get him to do this it is your own fault. If we have adopted this theory in good faith, expecting to realize any benefit out of it, let us go home with a fixed determination that this thing shall be a success. If we do, I predict that in fifteen or twenty years not a scrub cow will be found in Indiana. You get a man to reading of the improved condition of stock and his wife and children enjoy life better. Let us take hold of it as men and try to accomplish something, and I have no fears, if we do this, most encouraging results will follow.

On invitation, Governor Gray addressed the convention as follows:

THE GOVERNOR'S REMARKS.

Mr. President and Gentlemen of the Shorthorn Breeders' Association of Indiana:

I have not many moments to stay with you, but desire to say I thank you for calling on me to-day. I am glad to see you and meet you, as I am always that class of fellow-citizens engaged in the tillage of the soil, rearing of stock and developing the material wealth of the State. In running back over the history of the State, and remembering the kind of stock of forty or fifty years ago, the cattle were of an inferior breed, and hogs with long snouts, famliarly called "elm peelers." The appearance of the stock in general to-day shows a marked improvement in development in this direction.

The issuing of the proclamation alluded to by the President of this Association, and of the nerve it took to issue such a proclamation, I considered it was my duty. Of course there was no law for the issuing of it at all. I found that the Governors of other States had such regulations as this, and, as chief executive of Indiana, having, as I should have and did have, the best interests of the State at heart for the protection of stock breeding, I issued a proclamation on general principles, and would have found some way to enforce it if it had been violated. But I am happy to state to you, gentlemen, that I have not found any of the neighboring States disposed to violate it. I have had telegrams from different States asking for copies of the proclamation, and all evinced a readiness to comply with its provisions. It has had an effect, and that is to bring to your minds the importance of some legislation on the subject. There should be legislation establishing a live stock commission, in which live stock men should have a legal right against the cattle of other States. I felt it was my duty, because in Illinois and Ohio and all States surrounding us the Governor had authority not only to issue a proclamation of quarantine regulation, but to enforce it. I could easily see how Indiana could be made a market for all the diseased cattle in the country, and therefore I took this means to prevent it. I thank you, gentlemen, for the compliment you have paid me, and hope you may have an interesting meeting, and one that is instructive to you, and I assure you I would find great pleasure and happiness in meeting with you in the future. I would like to remain with you and hear the discussions, which I know will be both interesting and instructive, but I have official duties which demand my attention; therefore you will have to excuse me for the abrupt manner in which I leave you.

The Secretary read the following communication from Mrs. Virginia Meredith, of Cambridge City, Ind.:

HON. ROBERT MITCHELL,
President Shorthorn Association:

MY DEAR SIR—I feel as earnestly as any one can the obligation to assist in promoting the Shorthorn interest, and wish that I might at your courteous request write something really profitable to the cause.

The time long looked for seems about to dawn—the time when Indiana farmers want Shorthorns on Indiana farms. (1) Never were there so many public sales of pure-bred cattle held in the State as during 1885. (2) Never perhaps were prices so near being satisfactory to the seller. (3) Never before have so many farmers bought females; and most conclusive, (4) never have Indiana sales compared so well with those of Kentucky and Illinois. These are points that have significance, points that we can lay hold of.

A few years ago we were frightened about the great ranges of the West, but now we know that they are unsuited to the production of thoroughbred cattle, but rather furnish the best market for such cattle. Breeding must ever find its greatest profit and score its greatest successes on small farms and in herds under the especial care of the owner.

Our central position and good soil give us the conditions by which we may successfully compete with Ohio, Illinois and Kentucky in supplying the ever increasing demand for good Shorthorns. The most experienced breeders concur in their testimony that Shorthorns intelligently bought and handled will always pay a handsome profit. The returns are not so quick as with a crop of corn, and many beginners are trying to solve this kind of a problem: Can the added expense of pure-bred Shorthorns be met by improved methods of managing the farm and farm produce?

How long have we heard "*Save the timber,*" and the equally venerable "*Feed all your produce?*" No ingenuity can devise a reason for saving beech trees with dead tops. A calculation would astonish if it told truly how many profitable acres would be added to every farm by taking out the worthless beeches. Scientific investigators may in time discover that beech leaves sour the soil, but be that as it may—take away the trees and the *sunlight* will promote the growth of blue grass, will *sweeten* its flavor and will *enrich* its fattening qualities. Blue grass not being hurt by frost is available every day in the year. The ordinary "woods pasture," so called, of the State is an absolute expense, a tax upon the rest of the farm. How easily it might be converted into rich pasture, valuable enough to buy all the Shorthorns in Kentucky.

Hay finds its greatest value in the city markets, for city horses. In these days when "the baler comes to the hay" there are few Indiana stock farms where it has a feeding equal to its selling value. The farmer has another crop, not salable, yet worth as much to him pound for pound as hay. If he grows corn he is bound to grow corn fodder, and it is a matter of demonstration that by proper preparation it and blue grass pasture are more than an equivalent for the hay ration of even the most valuable cattle.

That is a superficial view which declares that if an animal *eats* what is given him nothing more is needful; *digestion* and *assimilation* are the great factors in profitable feeding. Experience proves (at least we think it does) that hay must be cut fine and the meal mixed with it to get the best results from the meal, which is the expensive part of the ration. Eaten with the hay the meal is carried along with it into the rumen and afterward by the process called "chewing the cud" is re-masticated and put in the best condition for the stomach proper and the complicated digestive organs of the ox. If then hay *ought* to go through the cutting-box, corn-fodder may as well be substituted (unless cut fine, fodder is not valuable.) If we can have abundant fodder at the cost of cutting corn early in September, he must be a wasteful farmer who does not feed *it* and sell his hay. Impoverishing the soil need not enter into the calculations on a stock farm.

If we champion a beef breed should we not feed generously? Demonstrate by each animal we offer for sale its ability to assimilate food? I would not wish that each Shorthorn should be as those of Mr. Wilhoit's show herd, but we may try to make our buyer think it *could* be, and *will* be when he gets it home and bestows the especial and intelligent care of the *ego.*

When one sees the possibilities of the Shorthorn as embodied in the beautiful yearling (the sensation of the show) exhibited by Mr. Elbert, at Chicago, he must indeed be a queer man who is not *satisfied* with the breed.

There is something particularly gratifying about a Shorthorn. When he comes to the very bloom of perfection as a beef animal he adds to it that blossom of beauty—the style of the thoroughbred. He captivates by his ability to hold up his head. The roan color is no more distinctive than the pose of figure and style of bearing. Other beef breeds, *unfortunately*, by their physical conformation are denied this charm.

Mr. S. R. Quick. I coincide with Mrs. Meredith in thinning out beech trees. In riding through the country I have been astonished at the amount of land that is worthless which might be brought into pasture land, and would be almost as valuable as cleared land. It is a good suggestion and all the farmers in the State may be benefited by the suggestion. Also, feeding corn fodder by using the cutting box. I see from the paper she is economising in feed, which is a good thing.

S. F. Lockridge offered the following resolution regarding the scale of points, which was adopted without discussion:

Resolved, That a Committee of Conference, four in number, of whom the President shall be chairman, be appointed by this association to confer with committees from the Shorthorn Breeders' Associations of Ohio, Illinois, Michigan, Wisconsin, Iowa, Kansas, Missouri and other States having State organizations of Shorthorn breeders, for the purpose of adopting a national scale of points for judging Shorthorns, and recommending the same to the National Shorthorn Breeders' Association for action.

Resolved, That the Secretary of this association be directed to correspond with the Secretaries of the different associations above named and request the appointment of similar committees by the presidents or executive committees of these associations, to meet in conference during the American Fat Stock Show of 1886, for the purpose indicated in the foregoing resolution.

The Committee appointed on Mr. Lockridge's resolution were Messrs. S. F. Lockridge, W. J. Quick, Thos. Wilhoit, and the President of the Association.

Dr. N. D. Gaddy, of Jennings county, read the following paper on

SOCIAL RELATIONS AMONG BREEDERS.

Mr. President:—The subject, "Social Relations Among Breeders Necessary to Advancement," is one which was selected for me by the Committee on Programme at the meeting of the Association last year. The Committee probably thought that we might say something that would elicit discussion by members able to do justice to the subject which they deemed important to be ventilated fully before the Association.

However applicable the subject to breeders of all stock, we shall not be unmindful of their probable wish that our remarks be more especially directed to breeders of Shorthorns.

Man is incapable of acquiring much knowledge about any branch of industry or business without aid from others. How to breed Shorthorns successfully is no exception to this statement. Much knowledge may be gained by assiduous study of books and papers written upon the subject of Shorthorn breeding, but the student's advancement will be greatly facilitated through interchange of thought during his social relations among breeders of experience, and those even who have had little experience yet are close observers and who freely communicate their knowledge thus gained. Through social relations unity of feeling and of purpose may be engendered and unity of action more easily organized, and mutual assistance promoted. Acquaintance becomes capital in all branches of legitimate business. Our minds are improved and our ideas become enlarged by contact with cultured minds. Business expands with the expansion of social relations. Success in breeding, success in business depends upon knowledge, and knowledge is limited to a degree by the extent and character of social relations. Knowledge is not only limited by social relations but it is greatly directed by the same influence. Magnanimity of thought and purpose are developed, and magnanimity of action is produced by well chosen social relations. * * * Much time and money are spent by breeders for the common good, which is necessary and profitable. The greatest giver of knowledge not unfrequently becomes the most bountiful recipient. He is forced to train his mind to study and to observation. He soon finds convenient and necessary to record facts to found statistical data to refer to and draw from as aids in his communications, and to guide his future action. "Social Relation Among Breeders Necessary to *Advancement*."

Advancement in what direction? We invite your attention toward advancement in breeding the perfect Shorthorn. To be able to breed a perfect Shorthorn it is necessary to advance to the knowledge of what a perfect Shorthorn is. Without this knowledge we shall be unable to recognize one, if we see many.

Contributions to the literature of this subject appear in books and in stock journals by many authors interested in Shorthorns and in lore pertaining to them. Practical breeders have drawn largely therefrom, and by social interchange of thought have succeeded in formulating explanatory aids in correctly determining perfection in the Shorthorns. Some of these are applicable to the living animal, while others are brought into requisition upon the butcher's block.

Perhaps one of the most practical formulated aids noticed by the writer lately, which appeared recently in most stock papers, is the scale of points adopted at the last meeting of the Kansas Shorthorn Breeders' Association. It is as follows, viz.:

Rump, level with good length and and breadth	6
Thigh and twist, full and well let down	5
Hips, broad and well covered	5
Flanks, well let down and full	3
Loin, broad, level and meaty	8
Ribs, fleshy and broadly sprung	7
Crops and chine, well filled, meaty and no depression	7
Heart girth, full and large	7
Shoulders, smooth and well covered	5
Brisket, well let down and forward, with little or no dewlap, broad between fore legs	3
Neck, clean and tapering	2
Horns, medium size, clean, tapering and well formed	1
Ears, medium size, fine and lively	1
Eyes, mild but full and bright	2
Head, clean and fine, masculine in bull	2
Bones and legs, fine and shapely, medium length	6
Tail, well set on, tapering and fine	2
Hair, abundant and massy	3
Handling, mellow, neither soft nor unyielding	6
Skin, fine, elastic, loose and medium thickness	2
Upper line, level and straight	4
Lower line, low down and even from brisket to twist	3
Weight basis—Bull, at one year old 1,000 pounds, at two years old 1,400 pounds, at three years old 1,800 pounds, at three and a half years old 2,100 pounds; females, at one year old 850 pounds, at two years old 1,100 pounds, at three years old 1,400 pounds, at three and a half years old 1,600 pounds	5
Symmetry, smoothness, style and general attractiveness	5
Total	100

Provided this scale be rejected by some associations or changed by the one that adopted it, it is nevertheless a great aid to the learner of what is most valuable as well as that which is least so to the practical butcher. This scale conveys to the eye approximately the relative estimate of points and those most desirable and necessary for approved development in the Shorthorn. This scale of points has been published without explanatory notes to aid committees in the show ring how to express accurately in numbers the estimate they place upon the animals under inspection.

To illustrate, take the first in the scale which is the "rump, level with good length and breadth, 6." Here are three things itemized—"level," "good length" and "breadth" to be expressed in a number less than "6" if any or all these mentioned items are found wanting. If the rump being scaled has "good length and breadth" but is not level, should 2 be subtracted for deficiency if found very drooping? and only one subtracted if spine is straight and level from the back to root of tail, but sloping on each side like a house roof from too much depression of the ischiatic bones? Again, if "breadth" is remarkably insufficient should 2 be subtracted? If "length" is wanting 2 also? If the rump is very deficient in all three respects should nought represent the status of the rump? Not because the animal has no rump, but because it does have a Shorthorn rump. These questions might be presented throughout the scale.

It is necessary to have a rule by which to place the proper estimate in fractions or whole numbers. A man in judging a Shorthorn by this scale must know how far from the perfect the deficiency to be marked *nought* must be, before he can be able to scale an animal correctly. This is no easy task to perform. Here he is driven to commune with breeders who may be able to direct him toward the desired information, or who are willing to study with him the subject in detail.

At our county fairs much dissatisfaction occurs because of the mode of judging, or, rather, the want of method in judging, and because of the incompetency of those who consent to do the best they know in that direction. If a competent expert could be secured and paid by each society to systematically scale each animal, from which breeders could obtain copies, satisfaction towards the society and each other would sooner or later ensue, and farmers generally would be benefited.

How are breeders to know a good "handler" from a bad one, and to comprehend its full significance as to the characteristics that it shows in the animal to muscular growth, its disposition to fatten, and the quality of the beef so necessary to know to affix the true integer in the scale? This scale of points was evidently made for the fat animal, and it would puzzle an expert in applying it correctly to one carrying little of the adipose tissue. The inexperienced breeder needs aid in applying this scale to either fat or lean cattle.

Breeders, through their social relations, gain more correctly a knowledge of the caprices of fashion concerning form, color and blood. Much of this knowledge, however, subjects us to great inconvenience, and a want of that knowledge or a willful violation of the rules of fashion is not unfrequently attended or followed by severe financial loss. No number of resolutions alone adopted by associations can alone control fancy or dispel fashion, but *fashion* has the power to subjugate fashion.

We saw less than two years ago a Duchess heifer sell for $7,000. Although her color was roan, it is exceedingly doubtful whether she would have sold for more had her color been the fashionable red. She was an excellent individual, and her blood or breeding was so highly prized that her color was little talked about and of no apparent financial consideration.

Possibly the purchaser, with many others, thought that roans present better handling qualities than do cattle of the fashionable red. Some breeders now prefer and have the nerve to use roan bulls at the heads of their herds, because they believe cattle of that color possess the inclination to take on fat better than those of other colors. What relation exists, if any, between color and assimilation is already being agitated by writers on the subject, and the subject awaits further investigation and proof. Here arises a practical question of importance to the breeder, feeder and butcher that claims united effort to settle. Perhaps the most practicable way to call out all the facts relating to this question would be for county and State societies to provide a fat stock class in their premium lists requiring each exhibitor to state color of each animal, the time fed, and the approximate amount of food consumed by each animal, and any other statement required by the societies. This would be effectually preparatory to a fat stock show at Indianapolis, where the crucial tests at the block, in connection with the facts accumulated, would afford much knowledge not now possessed by the majority of the breeders. By keeping full records of the facts, and discussing them before the societies, advancement in breeding would be promoted, while clearer views as to age, color and condition of cattle for the shambles would be widely disseminated.

In this connection one more question arises of perhaps more practical importance than anything relating to Shorthorns excepting that of beef. We refer to milk and butter. Is the Shorthorn a general purpose cow? Is she susceptible today of large milk and butter records? Few men have the necessary energy to grapple with these questions without social stimulus to direct and animate his will and talents toward the solution of these questions. Much thought and interchange of thought are necessary to devise practical methods for advancement if the necessity is considered to exist, of obtaining the facts as to the existing milk and butter efficiency, and how to improve this merit in the Shorthorn.

In conclusion, let me say that breeders have so many interests in common that their relations should ever be most cordial. Trivial differences should be forgotten; envy and hatred should find no entertainment. If your neighbor have better cattle, or Shorthorns of superior merit, emulate his energy and profit by his wisdom. Should a breeder obtain fabulous prices for his meritorious Shorthorns it is a demonstration before you of the wonderful development to which the breed may attain, and also shows the high estimate which is placed upon them by the well-informed and financially-able breeders. It is proof that you have chosen wisely and well. By exercising wisdom in your selections, prudence in your purchases, honesty and truthfulness in your selling, sociability in your transactions, success and prosperity will attend you in the laudable enterprise of breeding the invincible Shorthorn cattle.

DISCUSSION.

Judge Buckles, Muncie. I want this paper discussed before we leave it. I have been engaged in Shorthorn breeding because I think it is to the interest of myself and others around me. If this paper is true there is nothing to justify us in thinking hard of each other, and exhibiting a species of hatred and selfishness toward one another, but instead we need sympathy and co-operation among us. If a stranger comes in my section of country it is my duty and pleasure, if he refuses to buy in my locality, to take him to some other breeder where he can be suited. If a man comes to our county to buy a Shorthorn, we should not let him leave until he sees all. I have heard breeders speak disrespectfully about herds. It is not right. If your herd or mine is a little defective, the man who wants to buy will probably see it without your telling him. If he don't, it is the duty of the Shorthorn breeder to tell him, and if he does not, he is not worthy the name of a Shorthorn breeder. We should not magnify the good qualities or defects of the herds, but take him and show him the herd, and if he finds any defect let him settle it to his own satisfaction. If there are defects and the owner don't tell him, the blame is on the breeder.

EVENING SESSION.

January 26, 1886.

Convention met, President Mitchell in the chair.

Mr. Mitchell. I was favorably impressed with the remarks of Judge Buckles this afternoon in regard to men assisting one another in effecting sales. This idea of whispering in a stranger's ear that the cattle over the way are not as represented and cautioning him to be careful, is all wrong. At the National Shorthorn Meeting held at Lexington several years ago, I was impressed with a remark made by Mr. Goddard. The meeting was largely composed of men who were advancing the Duchess tribe of cattle, and were tramping on the toes of some. Some had preferred a defect of pedigree in the Seventeens, and were crying them down. At the sale he said, "a grand cow was being sold on the streets of Lexington, going at thirty dollars; some one said, 'put on another ten'; while some one else said, 'why, she is a Seventeen, and what are you bidding for?'" Mr. Goddard there illustrated that idea of running one another down. He said he saw one other Shorthorn breeder trying to destroy a sale by whispering in the ears of this man that something was detrimental to the Shorthorn cow because it ran back into the Seventeens. In visiting those men in Kentucky the very idea is presented by the men there. They don't let you go away from them without effecting a sale. If the man you visit has none to sell, he will take you to his neighbor, and that man to the next, and so on until he finally succeeds in making a sale. If that spirit was dominant among us it would be to our interest. This feeling should prevail, especially at our fairs, in assisting one another to build up men's interests, and not allow little personal animosities to work against one another's interests. We notice this in breeders of other cattle as well as the Shorthorn. I am glad that the Shorthorn men are beginning to feel that whenever they say a word to the detriment of others it is detrimental to them. If the Shorthorn men would work together as a unit, it would not be many years until the scrub cow would be no more in our State. I want to hear a general expression on this subject because it is a vital question among breeders.

Hon. E. S. Frazee, Rush County. I approve of every word the President has said on this subject.

J. N. Sankey, Vigo County. I am also favorable to sociability among breeders. We should be hospitable to one another. Suppose you should go to some breeder in Indiana to buy a cow, and he would show you a catalogue of the cattle showing a record on a certain page and certain volume of the Herd Book. You buy her and she has a calf. You send the cow on to have it registered, and there be informed that the cow had never been registered. It would be hard for me to recommend a person to go and buy of that man. There have been some in Indiana who have done things similar to that. When a man is guilty of such a thing he should be frowned down and not recognized in the Association. If we do not have cattle of our own we should try and assist our neighbors, but not recommend something that is not good in our estimation.

Thomas Nelson, Parke County.. Suppose we had a man belonging to this Association that was guilty of such a thing, what would you do?

J. N. Sankey. I would prefer charges against him, and expose him.

George W. Thomas. He should not only be exposed by this Association, but by the Record Association as well. We would place him where he belongs, and not admit him in the ranks of breeders of thoroughbred cattle and thoroughbred stock in general. The Swine Breeders are excluding members that force pedigrees to mislead customers. These misrepresentations should be made public, and any man making a misrepresentation, whether of individual merit or pedigree, should be published, that the imposition might not be palmed off on any one else. I have suffered such myself, and know what it is to have stock put on me without proper pedigree and familes before I got the Herd Book.

Thomas Wilhoit. While I indorse what has been said, I think the best plan is to let a man stand on his own reputation, and where he defrauds or misrepresents let us report that so that others may be on their guard. When a man comes to you and you have not an animal that suits him, go with him to a responsible man, and never take a man where he will get cheated. Where we see a man is honest, stick to him.

G. W. Thomas. Breeders should all be in possession of herd books, to which they can refer. Then if they get cheated it is their own fault.

S. R. Quick, of Bartholomew county, read the following paper on

THE MANAGEMENT OF A BREEDING HERD.

Mr. President and Gentlemen of the Association:

It is, and ever has been, a great pleasure to me to meet with the Shorthorn breeders of this, my native State.

I have been a fancier if not a breeder ever since I saw a Shorthorn, which was in the year 1844. That year my father bought four head of Shorthorns in Kentucky, which were the first brought to our part of the State.

From that time until the present I have had the care of Shorthorns, and have had the pleasure of breeding them, to some extent, since 1856; since 1865 I have made it a specialty.

I have noticed the extent of the wonderful growth that the Shorthorn interest of our State has reached in the last few years. I have taken much pleasure in visiting the herds of our brother breeders, as well as those of adjoining States, and also in visiting the fairs to learn who was breeding and what I could of breeding.

I have thought for sometime past that our State would be one of the leading

States in Shorthorn breeding, and the time is fast approaching when it will lead the van. Our breeders seem to be taking a lively interest in attending the sales of our State, trying to excel in their selections as well as in their breeding.

A cattle owner can soon become an expert in selections, but the difficult problem comes in the management of his herd of breeding animals after he has chosen them.

I feel, that while I have had some twenty years' experience in the management of a herd of my own, yet I am scarcely competent to dictate to others how they should conduct a breeding herd. Of all important subjects this is of the most importance to the Shorthorn breeder. In fact, his success or failure entirely depends on the proper attention to the cows to which he must look for offspring and increase in his herd, without which he would have no financial gain.

The first and most important thing I would call your attention to would be the keeping of your cows in good flesh at all times No cow should be allowed to go into winter quarters in thin flesh. Cows, near calving, should be kept by themselves, or with young cattle that will not molest or worry them, and, when stabled, should have a large, roomy box stall, well cleaned and littered. Breeding cows, in winter quarters, should always have plenty of room and bedding so they are comfortable.

While some breeders would advocate the separation of calf from cow during daytime, and others would practice the entire separation of cow and calf, rearing the calf on skim milk, I would do neither with my herd of breeding cattle. We want large, fully-developed calves—no stunted, half-grown animals, from lack of proper nourishment when starting their lives—hence, I would advise the small breeder to permit each calf to run with its dam until at least one month old, when it should be separated from her except at night. To the large herd owner I would say, make no attempt at keeping dam and offspring apart until the calf is at least five months (better seven) old, unless the mother is too thin in flesh.

These last remarks apply more to spring calves sucking through the summer.

Fall calves, occupying stalls with the cow, should be at once provided with a small feed box, the cow kept tied, and bran, or bran and meal, always in the calf's box. Later give it shelled corn with bran. Do this to teach it to eat, even if you keep it with the cow but a few weeks; it needs it all the more.

If a day you would not turn the calf out, but necessary for the cow's exercise, the box stall is an excellent place for his calfship during her absence.

The importance of training cattle to be led by the halter is well understood and appreciated by every one who has had experience in handling them. That every animal, young and old, should be well broken to lead cheerfully and submissively at any time without difficulty is a well-known fact.

The proper time to begin the work of haltering is when the animal is quite young if left until grown or nearly grown great difficulty is often experienced.

If the training is begun while quite young a very little time is necessary to render it tractable, and a few gentle lessons will soon learn it to follow you and be perfectly submissive. The willingness to be handled, caressed and guided by man is a prominent feature in the life of the calf.

The earlier young stock are made gentle by proper handling and training the more affable will be their nature.

The advantages to be derived from halter-breaking are very numerous, and the earlier they become accustomed to it the better they will serve their owners. The lesson once learned will never be forgotten.

Breeders who exhibit their animals at the fairs are aware, not only of the importance, but of the necessity of training them while young. An early, well trained animal will submit to the control of those having them in charge/

Calves should be weaned at from five to seven months old, then they are ready to take the grass or go into winter quarters, as the case may be. They should be well provided with feed and water.

Bull calves should always be kept separate from the heifers after weaning, and should have rings put in their noses at that time and handled quietly by the herdsman each day. In fact the entire herd must have great care taken so they can be approached and handled at any time.

The breeding bulls should be kept in a separate stable from the cows, and should have a grass lot to run in for exercise; they should not be fed much grain, but will be better sires if fed bran, shorts and clover hay. He should not be allowed to serve a cow but once if a good service is had. They should be handled daily with kindness and never whipped or abused.

Breeding cows should always be kept separate from other cattle. I breed my heifers from fifteen to eighteen months old. A cow should be bred the first heat after calving. One good service is sufficient, after which the cow should be put in a box stall with plenty to eat where she will be perfectly quiet for ten or twelve hours.

As to time of year for breeding, an early spring calf is preferable to a late one and most desirable, and early fall calves are much the best; but a good calf can never come at the wrong time.

DISCUSSION.

Judge Buckles. There is one idea advanced in the paper of which I wish to speak. It advises keeping bulls in separate stables from the cows. I do not know whether it is right or not. I have tried both. The bull that I use in my herd regularly, I would as soon let him stay in the same stable with the cows as not. If there is any advantage in keeping him in a separate stable I want to know it. If we keep him near the cows he seems to be better satisfied. When I had him in a stable to himself he was bellowing and discontented.

Mr. Quick. My paper was short; I did not want to go into details.

Judge Buckles. Why separate the cow from the calf? Is it better for either?

Mr. Quick. A man breeding on a small scale should separate them. Where more largely engaged I would not. The Judge spoke of keeping the bull near his cows. I found by keeping my bull in the next stall to my cows that he was restless and uneasy, and more liable to get loose and get with the cows, but by keeping him away he did not know the cows were near and was quiet. A man who breeds Shorthorns should know when a cow is served, and keep a record of it.

Thos. Wilhoit. I understand you prefer letting the calf run with the cow? That is not my experience; it injures the cow but not the calf. I separate the calf from the cow as soon as it commences eating. The cow will keep in better order, which is just as necessary as the calf. The calf always has to learn to eat, and if this is done early when you wean it, it never falls back at all.

Mr. Quick. Mr. Wilhoit misunderstood me. I feed the calf from the start in a box in the stall, but the calf improves faster when it runs with the cow and sucks at will. When you feed the cow it eats with her, and I feed some to suckling cows all the year round. When the calf is taken away from the cow the udder gets very full, and the calf sucks too much, causing the scours sometimes. When the cow is fed in a stall the calf learns to eat with the cow, and never gets a backset from the scours.

W. F. Christian. That question has troubled me as much as any other. I have adopted a plan which corresponds with Mr. Wilhoit's. I let my calves run with the cow about two weeks, when I separate them. I let the cow in at noon sometimes. The calf should not go with the cow after two weeks. It is not good for the calf to pull and tug at the teat, and in the winter the teat is liable to crack and become sore.

Walter J. Quick. We can learn something from the Hereford men, if they do not breed the kind of cattle we do. Some time ago I visited Messrs. Seaberry & Samplen's. They raise spring calves and would not have winter calves. A winter calf is worth only half as much as a spring calf. The calf runs with the cow until weaned. I saw two lots of cows, fifty in one and ninety in the other herd. One lot had bull calves and the other lot heifers. They had troughs arranged around the lot where the calves could come in and the cows could not. The calves also sucked when they pleased. They had two or three reasons for letting them suck. One was, that they had so many they could not attend to all of them sucking twice a day; the other, the udder filled up large and the calves hunching the cow injured it. In weaning they took them away from the cow entirely and never let them suck again.

J. Strange. There are other things to take into consideration, that is, keeping up the milking qualities. My rule is to separate the cow from the calf immediately. If we let the calf run with the cow she will give down all the time for the calf, and that habit will remain to a certain extent. I think I have maintained the milking qualities to some extent. The voice of this association is in favor of maintaining the milking qualities, and I believe we should not let the calf run with the cow all the time. If we want regular and fine milkers we should attend to them. My experience in handling bulls for the proper development of the animal teaches me that in serving cows it is essential to have a lot where they can have exercise every day; he is more active and will serve a cow with less labor than one that is closely confined.

Mr. Thomas. My experience is, where I have a heavy milker and the calf runs with the cow the calf seldom becomes hungry, and if one of the teats become dirty it is neglected. Three of my heavy milkers lost their teats in that way. I think a calf should suck twice a day; it makes a better calf than to run with the cow. As to bulls, I have experimented some in that direction. I allow my bull to run with the cows and occupy the same barn. By so doing he is better satisfied. A bull can find out when a cow is coming in heat two or three days before she comes in.

Mr. Ball. This is the first time I have met with the Association, and I must say I am well pleased with the meeting. I am not an extensive breeder, but I agree with Mr. Wilhoit in the management of calves. I have learned that where the calves run with the cows, as soon as the calves are taken away the milk invariably dries up. Cows that I have raised from heifers and kept the calves separate are the best milkers I have got. It develops the milking qualities by treating in this way, and the day is not far distant when the Shorthorn breeders will have to adopt that plan to develop the Shorthorns.

I can raise a good calf, and at the same time have a good milker, but I can not accomplish that by letting the cow and calf run together. The calf will do better, perhaps, but the cow will get thin in the fall. My calves have been troubled sometimes with the scours. When such is the case I give them less milk. It is well to learn them to eat when quite young. I sometimes have them eating at one month old. Land is worth from $50 to $75 per acre in our county. The farms are generally small, and the owners can not afford to keep a Shorthorn to raise a calf at present prices, but the day is coming when it will be different. I let the calves have all they want, and milk twice a day.

Mr. Walter J. Quick. The gentlemen of the Association misunderstood my father. We let the calf run with our cows, yet we put our cows up and feed them a little, which gives us a chance to milk those cows. We examine every one of them to ascertain whether she needs milking. The cow is noticed every day and the calf looked after, which becomes accustomed to you. The calf also gets good grass by running with the cow, which it otherwise would not get. There is a great difference between the small breeder and the large breeder. The small breeder, who has only a few cows and calves, is under different circumstances from the man who has many, which would require a great many men to look after them. The milking qualities are greatly injured by not being properly looked after. Mr. Sample said to me that cows frequently had spoiled udders by milk being left after the calf had sucked. In the Shorthorn we have a general-purpose cow—cattle that are better than the Hereford and Poll Angus. The strong points of the Shorthorn is the combination of beef and milking qualities.

S. D. Buttz. My experience teaches me that it does not take long until the calf will take all the milk if you let it run with the cow. The cow adapts itself to the calf. If the calf can not take all, she naturally decreases in the flow of milk. If you separate the calf from the cow after each time the calf sucks, the cow should be stripped if you aim to develop the udder of the cow.

Wm. Kinsley. Is it necessary to put rings in the nose of bulls? I have been breeding for eight years and find no necessity for rings; I use snaps.

Mr. Mitchell. I do not let the cow run with the calf. By doing so there are two troubles, that of weaning the calf and of weaning the cow. If the calf runs with a young cow you never get a well-developed udder. My calves have been troubled sometimes with the scours.

Mr. Huddleson. Mr. Quick, did the calves have the scours that run with the cows?

Mr. Quick. No, sir.

Mr. Huddleson. My experience is in the line of Mr. Wilhoit's; it is better for the calf, but not for the cow. As to the treatment of the bulls, I keep them in a grass lot through the day and don't let them run with the other cattle.

N. F. Gordon. I have lost many calves by allowing them to run with the cows. I believe it would be the best for the calves to take them from the cows. Take a good cow and let the calf run with her and as soon as it is taken away she will go dry.

James Dyar, Kokomo. I am very much interested in this discussion. There is one point you have not touched yet. I wish to ask Mr. Quick if he has any trouble in milking his cows after the calves are weaned?

Mr. Quick. It seems that I was misunderstood in reference to those calves. I advocate this mode in raising spring calves and in large herds, also in breaking the calves while young, and in keeping the herd quiet. A Shorthorn raised in this way you can milk and handle anywhere.

Mr. Mitchell. I had a lot of six calves in the orchard where there was plenty of grass; one of the calves became addicted to eating apples; it took the scours, and it became chronic. I want to know if there is a remedy for this?

Thomas Nelson. I have raised from five to twelve or fifteen calves in a season. I let them run in the orchard, and never had a calf to scour. Do any of you believe a large quantity of milk would give a calf the scours? I never had a calf to have the scours that got plenty of milk; sometimes they would get a little out of shape, but when the cow was kept right, I have had no trouble letting them run in the orchard, eating all the apples they wanted.

E. S. Frazee. Where a cow has a large quantity of milk, and the calf gets too much, it will get the scours, and, generally, where the calf runs with the cow, it makes it thick-necked and chuckle-headed.

Mr. Nelson. I let the calf run with the cow about a week, milking her two or three times a day; after that I separate them. If the cow is a good milker I let the calf to her three times a day. I make it a rule to get them to eating early, and spare no pains in handling them. I never let the bulls run with the heifers more than a month or six weeks.

Mr. Strange. I move that the committee take into consideration the milking qualities as a point of merit when conferring with the National Committee.

Dr. N. D. Gaddy, Lovette, Ind. I do not see how you can make a scale of this point. When it comes to scaling beef and milk in one scale I do not understand it.

Robert Mitchell. The thing is to establish a standard of excellence in the Shorthorn cow as to its milking qualities, making that one point.

Mr. Nelson. I can not see the practicability of it; these other points are pure, well-developed Shorthorn. Now you are going to add something.

Mr. Lockridge. It is your idea to instruct the committee that this shall be one of the points in a scale of one hundred.

Mr. Strange. Yes, sir. It seems to me it is a practical idea. If we claim anything in the milking qualities it is necessary to make it a point in the point of excellence.

Mr. Lockridge. It is impossible. The question is, Mr. President, can a committee go into a show ring and consider by a cow's appearance anything of her milking qualities. You have got to go to the pail. It may be a dry cow, and this scale of points is to be used at fairs, and nearly all of the cows exhibited there are dry, or nearly so. Now, can the committee, with any certainty, judge of the qualities of a cow that is dry? I do not see how it can be made a scale of points at the show. The Jerseymen make a test of their cows, and see how many pounds of milk and butter may be produced in a given time and a record made of it. By that means they arrive at something that is definite.

Judge Buckles. It occurs to me that one point in the scale is too small to devote much time to it. The ninety-ninth part of the scale is a small matter. If any of our Shorthorn friends wish to make a test, the better way to ascertain the milking qualities would be to prevail on the State Board to offer a premium for the cow that gives the most milk and butter in a given time. Those kept for show purposes altogether are not generally good milkers.

Mr. Thomas. I am not favorable to a standard of excellence at all. There are no two men in this house who would take a cow and report the same numbers on the same scale of excellence. It destroys the judgment of breeders and they depend on the scale when they should depend on the animal. The Shorthorn cow being a combination cow, we have lost one-half what we have talked of here to-day and fell back to a beef breed. A person raised on the farm who has observed the milking qualities can tell whether she is going to be a strong milker or not.

Dr. Gaddy. In pointing out a good milker we should take into consideration the escutcheon and general shape of the cow. We should study this up. If these indications could be pointed out and applied to the Shorthorn as a dairy cow I would be willing; but in this scale of points we are referring to the Shorthorn for beef. I do not see how you can make a combined scale, because I do not know how to apply the scale. We should have a rule by which to apply this scale. I hoped this part of my paper would not have been passed over in silence. There are few men in our country who can apply this scale correctly.

Judge Buckles. The Shorthorns in Indiana do not stand where they should as milkers.

S. D. Bultz. These four qualities are combined—beef, milk, butter and merit. We should give the milk a point of excellence.

Mr. Nelson. The only way to get the milk qualities before the people is as Judge Buckles suggested—to give premium for milkers, bring them to the fair and show them for a premium, but you can not do it with other breeds if you bring in points.

Mr. Thomas. All standards of excellence are based on money value. The question is, if we leave out the milking qualities, is the cow worth as much without it? It is money value in this country that controls things. If a good udder adds to the value of a cow, give it prominence.

A vote was taken on scaling the udder as one point of excellence, which resulted in its non-adoption.

The following resolution was offered by J. N. Sankey:

Resolved, That the terms fullblood, pureblood and thoroughbred, are in meaning synonymous, and should be so used and understood by Shorthorn breeders.

DISCUSSION.

Mr. Mitchell. I do think a surplus use of words should be avoided. "Thoroughbred" should not apply to Shorthorns. The word applies more directly to race-horses. I am certainly in favor of leaving that word off. Shorthorn means the register of animals, or those which are eligible. Some say they have a right to use it, but the question is why not say Clydesdale Shorthorn? Purebred means registered animals. The question was asked in the *Farmer* a short time ago, and it was argued back that fullblood and pureblood were the same thing, and that the fullblood can be made from the common stock. A pureblood is that which is produced without any commingling with anything else.

On motion, the resolution was laid on the table.

WEDNESDAY—MORNING SESSION.

Convention met at 9 o'clock, President Mitchell in the chair.

G. W. Thomas offered the following resolution, which was adopted:

Resolved, That the thanks of this association are due and hereby tendered Governor Gray for the prompt action taken by him in quarantining Indiana when her great industry was threatened with the introduction of contagious disease, and that we, as cattle breeders, pledge him our hearty coöperation in his laudable effort to secure efficient legislation upon this subject.

J. W. Robe, Putnam County, read the following paper on

THE HISTORY OF SHORTHORN CATTLE IN INDIANA.

Shorthorns in Indiana have a history, but it is indeed difficult to compile. It seems that our domestic animals are below the dignity of a "history," but many other things of far less note are exalted objects of record.

I believe from the information thus far obtained, there is enough Shorthorn matter on an average, in every county of the State, to form a good, readable essay; and you will not expect that I give it all, even if it were in my power, from the ninety-two counties of the State.

The Shorthorn interest of Indiana represents the largest and most important fine stock industry of the State. The actual money value of this noble race of cattle would be a very difficult problem to figure out. The old race of long-legged, slab-sided, sharp-backed, big-horned and long-haired quadrupeds is rapidly disappearing, and the lordly Shorthorns are being substituted.

Shorthorn breeders are doing much to solve the problem, how shall 60,000,000 people be fed, as Americans ought to be fed.

The date of the arrival of the first "pure bred" Shorthorn on Indiana soil is uncertain. But from the best information I am able to gather the *very first* was brought from the Kentucky Shorthorn region with their owners as they migrated to a new home in Indiana; in the shape of a family cow or a promising young bull. Hence, with the growth and spread of her inhabitants, they have gradually found their way into different localities, and have thus become a fixed factor in her products. So I have found it very difficult if not impossible to trace, either from books or the memory of man, their *first* introduction, conformation and spread in the different counties of the State. She has evidently drawn, for her *early* supply of Shorthorns, from the descendants of the Miller & Gough importation and the Colonel Sanders importation. These, no doubt, spread to many different counties; first, to the southern part of the State and then gradually they found their way farther north.

In 1825, Mr. Edward Talbott, moving from Kentucky, brought with him to Jefferson County, near Madison, Ind., two young cows and one bull, descendants of the Sanders importation. No special record was kept of their breeding and no pains taken to spread the blood or keep it pure. The cows, however, did excellent duty as family cows for many years, yielding large quantities of milk and butter. They were good specimens of the breed; red and white in color and of good form.

In the year 1828, Mr. John Owens, an intelligent and enterprising young farmer, of Monroe County, had Shorthorns of the early Kentucky importation. They were reds, roans and whites, and a herd of very superior milkers. Mr. Owens took great pride in his cattle and kept a record of their names and breeding. Only a few of his animals have ever been entered in the herd book. Some seemed to think these cattle at first were "somewhat deficient in breadth of hip and roundness of rib;" but these defects were much improved by later breeding and the introduction of some "Durhams" from Ohio.

In 1835 Mr. Owens exhibited quite a number of his herd at the first Marion County Fair, held in Indianapolis on the Governor's Circle. They were pronounced by the visitors to be very excellent animals; low-bodied, and showing a wonderful propensity to give milk. They attracted a great deal of attention and brought forth much comment, it being a novel feature in those early times to see such fine cattle.

Mr. Owens died in the spring of 1841, and in the fall his herd was mainly sold at public sale, retaining one young bull, nearly white, Plantagenet, out of Jenny Deans, by Bertram, and one white cow, Miss Mott, and a few others for the use of the family. The highest price obtained at this sale for one animal was $100.50. The herd was scattered promiscuously through Monroe and adjoining counties. In the following years the descendants of these cattle became numerous by crossing with the common stock of the country; nobody, however, kept any record or paid any attention to keeping their blood pure. The consequence was, during the next ten years the general stock was much improved, and the blood thus introduced very much deteriorated.

In 1835 Moses Halled, moving from Kentucky, brought to the county a young Shorthorn bull that he purchased of Governor Metcalf for $100, also a cow for which he paid $75. These laid the foundation for a herd of very fine milkers, of which there are some of the descendants in the county at the present time. Asher Labataux, Henry Eller and Mr. Stark brought Shorthorns from Kentucky, and bred them for a time and then sold out, having produced many good animals, and at present there are some eight or ten small herds in the county. Samuel Dinsmore, Anthony Johnson, William Woods, Parker Thompson, Samuel Wright, John Reed, Ben. Kirby, Ben. Walden, and many others have good bulls and a few thoroughbred cows. Their object is to raise good beef cattle more than fancy pedigreed animals. There are very few good farmers in the county now but what use a Shorthorn bull. The result is the county is sending out to the beef markets a class of cattle that few counties in the State can excel, showing that Shorthorn blood has done much in Monroe County to elevate her cattle towards a standard of perfection.

SHORTHORNS IN FRANKLIN COUNTY.

The first importation made to the State from England was by Christopher Whitehead, in 1836. He died before the publication of the herd book, and left no public record of his cattle. At least four head seem to trace to this importation—two bulls, Ergx (1982) and Indiana Grazier 4041, and two cows, Matilda and Adelaid. The Agricultural Report for 1852 says: "The progeny of Whitehead's bulls are now regarded by the Shakers of the White Water Valley and others in that part of Ohio as the best Durham stock of the country."

The progeny of this importation were soon disposed of to the Shakers, and the stock of Indiana was very slightly benefited.

In 1856 James Wright bought of Levi Druley, of Wayne County, a number of Shorthorn cattle. He left no special record, and I can only find a few pedigrees in volumes three and four, recorded by him.

Andrew Shirk bought a number of Shorthorns of B. Cavanaugh, of Hamilton County, Ohio, but kept no record. He died in 1882, and his herd of really good cattle were sold at public sale, mostly going to parties residing in the county.

In 1870 William M. Barns bought of Daniel McMillan, of Xenia, Ohio, four Shorthorns, and in 1872 a heifer of Wm. Warfield, of Kentucky, and in 1878 a bull of Thomas Megibben, of Kentucky, and has now forty head of exceptionally good animals.

In 1872 Clinton T. Gorden bought of W. W. Thrasher, of Fayette County, three head, and now has a herd of about twenty.

In 1874 Joseph M. Vawters bought a few Shorthorns, and now has a herd of twelve.

In 1882 James McClene established a herd, and now has seven.

John Martin and some others have a few good animals.

At the time of Whitehead's importation the cattle of Franklin County were of a very low grade; but since, through the use of pure-bred Shorthorn bulls, the grade has been improved, and now the cattle of the county are as fine as can be found anywhere in the State.

SHORTHORNS IN POSEY COUNTY.

About the year 1838 the Owen Brothers, of New Harmony, purchased from Champaign County, Ohio, three Shorthorn bulls and a number of cows. The bulls were Chiaico, Van Buren and Wellington—the latter proving to be a remarkably good breeder. An old citizen of the county, who had the care of them, claims that one of the cows was a better individual than any cow he has seen at recent county fairs. The very low price of cattle that prevailed soon after, and the consequent neglect to preserve anything like proper records of the breeding, added to the determination of the farmers genarally not to pay any service fees, caused the cattle to be sold out at very low figures.

A year or so after the introduction of the above named cattle, Colonel Long, of Kentucky, brought to New Harmony, for sale, a pure white Shorthorn bull, which he called "Nimrod." He is described as being a little leggy, but proved a wonderful breeder, as the traces he has left, on little more than natural foundation, abundantly proves and bears out well the testimony furnished the *Breeders' Gazette*, by Mr. Harness Renick, of the great feeding qualities of the "Nimrods," white though they be. In his article to the *Breeders' Gazette* Mr. Renick pays high tribute to the Nimrods as a family, and deprecates their disappearance from the herds of breeders generally, which he claims was solely the result of the predominance of white in their breeding. Indeed, the impress on the native cattle of Posey County of this one bull, Nimrod, was very marked—traces of it remain to this day—a lapse of over forty years. True lovers of the Shorthorn race can heartily unite with Mr. Renick in deploring the growth of the color mania and rejoice at the recent blows it has received in the victories for the Roans and Whites the past two years, both at Fairs and Fat Stock Shows.

After a lapse of many years and the war of the rebellion had subsided, young farmers arose up in their might who thought the time had come for the introduction of the improved breeds of cattle into Posey County. The principal movers in the matter were L. A. Burk and Eugene F. Owen, both of New Harmony. The former failed financially before accomplishing anything of importance, and the latter was rewarded with but meager success. Finding it imperative in consequence of the ill health of family to lease his farm temporarily, Mr. Owen sold his small herd at public auction, most of them going to Isaiah Fletchall, of Poseyville, and Luke Wiley, of New Harmony. Neither the breeding nor the manner of keeping these Shorthorns were of that high character necessary to impress properly the average farmer, especially in times of great depression in prices of cattle, as was the case for several years following the Burk and Owen introduction of Shorthorns.

Nevertheless it was universally acknowledged in course of time, that Mr. Fletchall and Mr. Wiley received higher prices for their two-year-old steers than their neighbors could get for theirs at three years old. The leaven thus started was worked up into a considerable loaf by Elias Stallings, John L. Harris, W. W. and Proctor Humes, Elisha Bailey and E. F. and H. P. Owen—all of whom purchased a few Shorthorns in the spring and fall of 1883. In the spring of 1884, E. F. and H. P. Owen purchased a high-class bull of exceptionally good breeding, which buoyed up the tide so strongly set in, in 1883, and made it an assured fact that the wave of prosperity, on which the Shorthorn interest of Posey County was riding, would never recede, but go on with the progress of the cause elsewhere.

The Shorthorns owned by Burk as well as those of Owen were recorded or eligible, but after passing into other hands they were allowed to drop out. Those bought in 1883 and 1884 are all of record or eligible, and their owners seem disposed to keep their offsprings registered.

Some cases of one hundred pounds per month up to six months, and a thousand pounds at a year old, have been made with the calves from the late purchases, which would seem to indicate the status of their Shorthorn blood. The last introduction includes animals sired by such noted bulls as Wild-Eyes Cannaught (34099); Barrington Duke, 3d, (37624); 22d Duke of Airdrie (16695); Kirklevington Marquis (52310), etc.

In 1884 and 1885 yearling Shorthorn bulls were purchased for Posey County by Isaiah Fletchall, Daniel Fitzgerrel and Nathan Montgomery, all of Poseyville. The number of pure Shorthorn bulls in the county sufficiently old for service is about twelve; while there are a number more claimed to be pure, but cannot be recorded for want of neglect. The number of pure females over one year old will approximate forty, while quite a number of spring, summer and fall (of '85) calves are coming on under good treatment. There are quite a number more that are pure and others nearly pure to swell the ranks of the foundation of the future *beef interest* of Posey county, so long neglected.

SHORTHORNS IN GIBSON COUNTY.

Early in the year 1839, Robert Stockwell and James Finney, of Princeton, purchased a Durham bull weighing some 2,700 pounds, also a cow, and kept them some two or three years and sold them to the Owen Brothers, of New Harmony, in Posey County. In the year 1842, Elisha Embree purchased a fine two-year-old Durham bull from some party at Shakertown, Ky., and brought him to Gibson County, paying three hundred dollars for him. But soon after he traded him to the Owens for other stock, so no very substantial improvement was had in the county from these cattle.

In 1850 or '51, Jesse Turner, of Princeton, while visiting friends at Lexington, Ky., was so impressed with the looks of the Durham cattle in the neighborhood that he bought a fine bull and two excellent cows and brought them to Gibson County. He, however, was not a farmer, and not having pasture to properly take care of them, after keeping them a year or two, sold them to John K. Finney, in whose hands they were bred for some time, and from that stock much improvement was made in the cattle of the county. Mr. Finney was quite successful in breeding Shorthorns for a few years, selling bull calves at from fifty to seventy-five dollars each. He, however, did not keep up his herd properly, and finally they were disposed of to various parties in the county, Elisha Embree purchasing some of the remnants, and again we find him improving in later years.

At the first fair held in the county, October, 1852, John Finney and Jesse Turner took all the premiums offered for Durham cattle. The next we find was Thomas Harbinson, who brought a bull and cow from Kentucky, and from these many fine cattle were produced.

In 1873, Mr. R. M. J. Miller bought at Dr. Stevenson's sale, in Putnam County, a 2d Airdrie Duke, paying four hundred and eighty dollars for him; and at John Giles' sale, in Sullivan County, he purchased several Shorthorn cows Mr. Miller, however, soon abandoned Shorthorn breeding and sold Airdrie Duke to a party near Petersburg, Pike County. But improvement was had in the neighborhood from his exceptionally fine start.

In 1871 Robert Mitchell bought four heifers and one young bull from Mr. Brown, who had brought into the county from Kentucky a lot of Shorthorns—for sale. The bull was a large-boned animal, and the heifers were well-rounded.

At Charles Lowder's sale, in Hendricks County, he purchased the bull calf Booth 4th, paying $300 for him. He was a good animal, and proved an exceptionally good breeder, as many of his get still remain to show the Booth stock in him. He also purchased at Thomas Nelson's sale, in Parke County, November, 1883, four head of Shorthorns, and in the same month, at Dr. Forsythe's sale, in Johnson County, he purchased a Young Mary Bull (No. 52,461), so that now he has the largest herd of registered Shorthorns in the county.

At Owensville W. L. Waters and Mr. Smith have been improving the stock of their respective neighborhoods for several years by the use of Shorthorn bulls. In 1884 they went to Kentucky and bought a lot of Shorthorns, being well satisfied with the improvement that the use of Shorthorn bulls had made upon their cattle.

John Hall also has some good registered animals, and is doing a good missionary work in his neighborhood. John R. Erwin also has been engaged for a short time in breeding Shorthorns, getting his start from the Owens of New Harmony.

Several have some good grades, and the work is now progressing. But from the early introduction of Shorthorns into the county it can be truthfully said that but little progress has been made. Probably about fifty head of registered animals are all that can be counted. However, what few there are hold the fort, and the exhibit of cattle at the Gibson County fairs are almost exclusively of Shorthorns, and wherever the introduction of Shorthorns has been made in the county the steers of that neighborhood are watched for by the cattle buyers, and the time is now near at hand, although long delayed, when the farmers of Gibson County will, as a rule, recognize the true merits of Shorthorns.

SHORTHORNS IN PUTNAM COUNTY.

Putnam County, being settled by Kentuckians, has long been noted for its good cattle.

In 1837 Dr. A. C. Stevenson purchased a pair of the John Owens cattle of Monroe County, paying fifty dollars each for them. The cow proved an excellent milker and breeder, and the bull a great improvement over the common cattle of the county.

He afterward bought an excellent bull (Monarch) from the herd of Offost & Marshall, of Kentucky. He was roan in color, a heavy-bodied animal and a good breeder. But times were dull, and the Shorthorn breeding proved of little profit except for the improvement. However, he raised some good cattle and much better steers than his neighbors, which proved of benefit in after years.

About the year 1840 Mr. Frakes brought a bull of the English breed from Kentucky to North Putnam. He is described as having a lengthy, low body and cow horns. After this, Colonel Farrow brought the bull Bachelor from Kentucky. He was a large, heavy boned animal. These bulls left their distinctive impress upon the native cattle of their respective neighborhoods.

In 1839 James Stevenson, and in 1846 Joseph and James Allen, moved to the county from Kentucky and brought with them some of the Kentucky Shorthorns, both bulls and cows. All these early importations to the county did much to awaken an interest in Shorthorns, and opened the way for further improvement in after years.

In 1852 a stock company was formed in North Putnam, and Anderson Johnson was sent to Kentucky and bought Gold Dust from George M. Bedford. He was a very light roan, close, heavy bodied, good form and handler, large, and a fine show bull. He was among the best bulls that ever feasted on Putnam bluegrass, and did splendid work in the improvement of Putnam stock on little more than a natural foundation. He was exhibited at the State and county fairs, and never failed to lead the shows. It was he that the owners of the recently imported bull, Earl of Seaham, were afraid to compete with for the State Fair premium, in 1852. Earl of Seaham had won high honors in England, and also in New York, the year previous, and his owners did not wish to have him beaten so soon in Indiana; so the committee had the name of pronouncing empty honors over him without a premium, saying: "He had won the highest honors of any living animal in America." As his owners wished to have it said of him, "he never was beaten when shown for a premium."

In 1852 a company of Greencastle's enterprising citizens purchased two bulls of the improved breed of cattle that now began to excite the average farmer. They were Anther and Peep-O'-Day Boy, bought of Colonel Sherwood, of New York, both got by the imported bull, Third Duke of Cambridge, and cost $300 each. Anther was a medium sized animal, extra fine handler, low bodied, fine bone, roan in color, and a good feeder, while Peep-O'-Day Boy was a large, red animal, rather coarse in bone, and longer in coming to maturity. These bulls were shortly sold by the company and went into private hands. They had wide range and got many fine steers.

Dr. Stevenson afterwards used Peep-O'-Day Boy in his herd, and sold a bunch of ten thoroughbred steers, got by him, that brought $224 each. These steers were shown at the county fair in a group and attracted much attention. They were shipped to New York, and there were an easy first against a bunch of Kentucky's best. They were then taken to Boston and there paraded in the streets, receiving great attention, and were much admired by all.

In 1853 Thomas E. Talbert bought a bull, Miranda, from the Shakers, in Kentucky. He was a good sized animal, and a splendid feeder and stock-getter. He was afterwards taken to Jefferson county, where he died.

In 1853 Dr. Stevenson went to England and inspected in person the most noted herds of the kingdom, and purchased, for himself and Mr. Allen, what promised to be most useful, and brought them direct to Putnam county—two young bulls, Prince of Wales and Fancy Boy, and four heifers, Strawberry 5th, Bloom, Violet and Miss Welbourn, Bloom being the only red and the other five roans. Mr Allen took Miss Welbourn and one-half interest in the two bulls.

These animals grew to be fine specimens of the breed. They were extensively shown at the State and county fairs for several years, and were considered very wonderful animals, and took their full share of premiums.

These two bulls, Fancy Boy and Prince of Wales, were extensively patronized by persons in various parts of the county and the adjoining counties, and were the means of greatly extending the breed of Shorthorns here and elsewhere.

The Doctor bred the three remaining cows as long as they lived, using the bull Fancy Boy as long as he deemed it prudent. He was then sold to Alfred Hadley, in Parke County, where he died. At first he retained all the heifers, selling the young bulls from $100 to $500 each.

There are four of this herd illustrated in volume twelve of the A. H. B. These animals and their descendants are recorded in the several volumes of the A. H. B.

Wishing to retire from business on account of age, in August, '73, he made a public sale and disposed of his entire herd of about fifty head. All were the descendants of the three imported cows. One-third of the herd averaged $600 each, and ranged from $150 to $1,100 per head, bringing nearly $18,000.

It was during a period of over thirty-six years that he gave himself to the improvement of the live stock industry of Indiana, and in that time he built up a reputation, by strict integrity in all his dealings, that begot a confidence in his word that richly deserves imitation by all.

Mr. Allen raised a very fine herd from his cow, she having produced him eight heifer calves in succession; but in 1865 or '66 he sold them at public sale with his other effects.

In 1870 a company of eight, through chosen representatives, sent to Kentucky and purchased one bull and eight cows of the best. The bull, Prince Abrams (got by the 14th Duke of Airdrie, and costing $1,700), proved himself a very superior sire, throwing his likeness, to a marked degree, upon all his offspring. The cows, costing from $200 to $650 each, were finely formed and fashionably bred, and did much to bring up the Shorthorn interest of the county.

This move somewhat widened the sphere of Shorthorn breeders in the county, and quite a number of herds sprang up in the few following years. Some of the company sold out and others continued in the business.

A. S. Bryant & Son from that time on have been known as prominent Shorthorn breeders of the county, keeping a very excellent herd, having held two public sales, and now have a herd of about forty-five very excellent animals.

Hon. S. F. Lockridge began breeding in 1872, buying in Kentucky some twenty head of cows and heifers, at an average cost of $800 each.

Not long after this he went to Canada and purchased Lord Strathallan, at a cost of $2,600. He was bred in Scotland and calved in Canada. He was a magnificent show bull, of fine form and highly bred, weighing 2,600 pounds. Mr. Lockridge spared no pains or money in laying well the foundation of his herd, and bred many fine specimens, with this grand bull at the head of his herd. Mr. Lockridge has shown his herd repeatedly at the fairs, with marked success. He has held two public sales, and now has a herd numbering about thirty head.

T. C. Hammond, President First National Bank of Greencastle, began breeding in 1874. Being a gentleman of wealth he has spared no means in providing himself with the best, and has reared many high-class animals, having held two public sales and still has a herd of thirty-five. He takes great pride in his herd, and looks carefully after their breeding.

In 1883 S. H. Judy brought from Kentucky to the county thirty-three head of finely topped Bates animals; has had one public sale and now has a herd of seventy head of good animals.

Thomas E. Talbott, Peck Bros., and many others, up to at least thirty-two breeders in the county, possessing some six hundred head of purely-bred animals, are doing much to spread the good qualities of the breed in their respective vicinities.

There are besides in the county a large number of very high and valuable grades. There are shipped annually from the county a large number of high-grade steers, and much of their value depends upon the Shorthorn blood in their veins.

S. F. Lockridge sold eight thoroughbred steers, kept as the steers of the county are commonly kept, for $122.50 each at three and a half years old.

Higgins Lane sold three high-grade Shorthorns for over $200 at three and a half years old.

James O'Hair sold three high-grade steers, four years old, for $300, enough to show the value of our high-grade cattle. The important fact here is that these cattle were not sold as fancy bulls or cows, but for the shambles—fatted bullocks.

In 1884 there were listed in the county 17,540 head of cattle, and it would be hard to find a pure scrub out of all that number.

There have been held in the county nine public Shorthorn sales, selling 473 animals for $54,550, besides the very large number sold at private sale, of which I can give no estimate.

STATE.

In the first volume of the Herd Book, published in 1846, there are no pedigrees from Indiana. In the second volume, published in 1855, Indiana has pedigrees recorded by thirty-five different breeders from nineteen different counties, recording over 137 head of Shorthorns. The various public sales throughout the State have greatly facilitated the spread of Shorthorns in the State.

There are now, according to the best estimates we can get, about 900 breeders and 12,000 head of Shorthorn cattle in the State. The names of but few of this number are found regularly contributing entries to the Herd Book, and it is evident that generally their operations are confined to the supply of the local demands for better cattle existing in their immediate vicinities. These breeders of modest proportions, whose names the public never hear, are, after all, the true missionaries through whose efforts the great cause of live stock improvement owes its principal advancement among the people, each one becoming a center of wholesome instruction in his immediate neighborhood, and as their number increases it becomes impossible to fully realize the good they are accomplishing.

SHORTHORNS IN WAYNE COUNTY.

BY MRS VIRGINIA MEREDITH, CAMBRIDGE CITY.

The first Shorthorns brought to Wayne County were by Mr. Thornburg and Jonathan Justice. The farm of the former was in Fayette County, on the line between Fayette and Wayne, and both counties received the benefit of the new blood. These gentlemen, on February 9, 1833, bought in Kentucky two yearling bulls, Dimple and Logan, and two heifers, Venus and Beauty. These cattle were the foundation of the herd bred continuously since on the same farm by Mr. Thornburg, his son Milton Thornburg, and his grandson Oliver Thornburg.

About 1838 or '39 Wesley Warnock brought some Shorthorns and Shorthorn grades to the county, and they were bought by Solomon Meredith and Sanford Lackey, who sold them as opportunity offered to farmers throughout the county. It was about ten years later that the Druleys, of the eastern part of the county, began to buy cattle in Kentucky. William and Levi Druley brought first the bulls Oregon, bred by Brutus Clay, and Nelson, bred by Mr. Duncan. In 1851 Nicholas Druley, Dennis Druley and Barton Wyatt, bought of James Kinnaird three yearling bulls, Dan Morgan, Daniel Boone and Gold Hunter, and two cows, Golden and Caroline. It was about this time that George Davidson bought of Mr. Kinnaird the foundation of his herd, that afterward became noted in the show ring. The most notable Shorthorn of that time, however, was imported Earl of Leaham (10181), bought in New York by Wm. T. Dennis and brought to Richmond in 1852. Mr. Dennis paid $750 for him, a very high price in that day, and one that brought upon the Colonel such severe criticism that he sold the bull two years later for $1,300 to Wesley Warnock of Kentucky. Earl of Seaham was of the choicest Princess breeding, a strain of blood that has always been prized by discriminating breeders, for it has a recorded pedigree older than that of any other family of Shorthorns.

Wayne County was singularly fortunate in the high character of the stock introduced at an early day, for we find that the next year after Earl of Seaham was bought, General Meredith obtained from New York the imported bull Balco (9918), of Mr. Bates' Wild-Eyes tribe.

General S. Meredith, in 1851, established the herd known as the Oakland Farm Herd. Cows were bought from the best Kentucky herds, and also from Ohio; and later, in 1854, two imported cows were purchased. Imported Gaudy by Sweet William (12162) was perhaps the most profitable cow ever in the herd, if we estimate the quality and number of her descendants. One of her daughters, called Dolly Madison, by Balco (9918), was famous as a show cow and prize winner.

At the first State Fair, held in 1852, of fourteen premiums in the Shorthorn class, Wayne County won seven. Also sweepstakes on cow and best ten head.

In 1853, at the second State Fair, of sixteen premiums on Shorthorns, Wayne County won eight, and besides captured sweepstakes on bull, on cow and on best ten head.

The most memorable fight ever made by Wayne County Shorthorns was in 1853, at the United States Cattle Show held at Springfield, Ohio, when there were three herds in competition for the $500 prize. The committee consisted of five gentlemen. The herds were from Ohio, Kentucky and Indiana. After hanging for two days, the committee, being unable to agree, recommended that the premium be withdrawn and no award made. The Wayne County herd had two votes in the committee.

George Davidson, in 1858, exhibited at the United States Show, at Louisville, Ky., his fat steer Anson, a high-grade Shorthorn bred by himself. He also exhibited Olive, a pure-bred Shorthorn. These two animals were always successful in the county and State fairs of Indiana, and that they were able to win two first premiums in Kentucky was glory enough for the owner. Anson weighed 2,400 pounds. He was slaughtered in Pittsburg when five years old, and the quarters weighed exactly in the same notch, 400 pounds each, a very unusual circumstance. Net weight, 66⅔ per cent. of live weight. Olive sent to the Boston market, and dressed 68 per cent. Her live weight was 2,100 pounds.

At the same show General Meredith exhibited four Shorthorns and took three premiums.

There was no railway from Wayne County to Indianapolis at the time of the first two fairs, and one must admire the spirit which led men to take stock fifty or sixty miles on foot to show at the State Fair. There was "no money in it," to be sure.

There was a year when of thirteen silver pitchers offered as premiums, eight were taken by Wayne County, and silver cups innumerable.

The first public sale of Shorthorns was made in 1851 by Wm. Druley's administrator, when the cow Adelaide sold for $347.

In 1852 Lewis F. Allen brought his entire herd from New York to Richmond and sold it at public sale (June 21). The catalogue contained the pedigrees of forty-four cows and twenty bulls. The average price was about $200, bringing the pretty little sum of $12,800. Buyers were attracted from Ohio and Kentucky, as well as from all parts of this State.

In 1856 General Meredith held his first sale at Oakland Farm. It may be interesting to note that up to and including 1885 ten public sales have been made from this herd, selling about three hundred and fifty animals for about $100,000. The following bulls have been used consecutively in this herd: Imp. Balco (9918) (bred by Mr. Bates, and of his Wild Eyes tribe); Imp. Crusader (12667) (bred by Wm. Douglass, Scotland); Oliver 5044 (bred by Jere Duncan, and of his Nannie Williams family); Heir of Oakland 6852, from the McMillan herd, of Ohio; a Young Phyllis, Forest Mapier 11973, a pure Booth and great prize-winner; London Duke 15th 20274, of Mr. Bedford's breeding; 20th Duke of Airdrie 13872, bred by Mr. Alexander, was, perhaps, the highest priced bull ever owned in Indiana. After two years' use in the Oakland herd he was sold to the Messrs. Hamilton, of Kentucky, for $7,000. Next was Imp Geneva Wild Eyes 29656, bred by Mr. Cheney. Baron Wild Eyes is now at the head of the herd, being the third of that Bates tribe to succeed to the honor.

Albert Marlatt, east of Milton, established a herd of Shorthorns in 1874, and has increased it by breeding and purchase. He has held three public sales, and animals of his breeding have been extensively distributed over the eastern and northern part of the State. His herd now numbers forty head, and the bull in service, Noxubee Duke, is of the popular Young Mary family.

There are now eight herds in the county, those of James Marlatt, Abram Marlatt, Joseph D. Spahr, Wm. Parry, James White and Martin and Wm. Worl.

The latest honor scored by Wayne County Shorthorns was at the late Chicago Fat Stock Show, when Mr. Earl's five grand yearlings made a record flattering to any breeders. The dams of those five yearlings were Wayne County cows.

DISCUSSION.

Mr. Mitchell. During the present year we will be in a political campaign. I want us to look to our interests and get men in the Legislature who will work for us. Last year a bill was prepared to meet this dread disease but was smothered by the Legislature. We want men there who will take an interest in this matter, and we want in addition a chair of Veterinary Science at Purdue University. This is an educational institution and demands and urges us to see that it is properly protected. This question we are all interested in, no matter what your political sentiments are. The Governor saw the approach of the disease with no power to protect by law and we do not want this to occur again.

Mr. Nelson offered a resolution proposing a change of time in holding the meeting to November. After a lengthy discussion the resolution was withdrawn.

The following officers were elected for the ensuing year:

President, Robert Mitchell, Princeton.

Vice President, S. F. Lockridge, Greencastle.

Secretary, Walter J. Quick, Columbus.

Treasurer, E. S Frazee, Orange.

Dr. Gaddy offered the following resolution, which was adopted:

Resolved, That this Association recommends to the State and County Agricultural Societies to offer premiums at their respective fairs for fat steers, preparatory to holding a Fat Stock Show at Indianapolis in the future.

Mr. Mitchell, after his re-election to the office of President, said: "Whatever I can do will be done with all my ability to the best interest of the Shorthorn breeders of the State, but when I pledge myself to that I want every man to pledge his obligation to do his part. It takes a united effort. I hope every member of the Shorthorn Breeders' Association will feel the importance of our work and go forward until Indiana will stand first in the rank of the Western States."

Mr. Sankey, from the Committee on Programme, reported as follows:

1. President's address.
2. The difficulties to be surmounted by a new beginner and how to do it. Thomas Nelson, of Bloomingdale, Parke County.
3. Milk and beef qualities combined in Shorthorns. S. D. Buttz, Columbus, Ind.
4. General care of herds. By H. B. Cole, Morristown, Shelby County.
5. How to apply the scale of points in judging Shorthorns. S. F. Lockridge.
6. History of Shorthorn cattle in Indiana. J. W. Robe, Greencastle.

7. Why am I engaged in raising Shorthorns? Rowland Yorkes, Snoddys Mills, Fountain County.

8. Should one bull be used on the entire herd, provided it is not too large and none akin? E. S. Frazee, Orange, Fayette County.

9. Diseases of cattle. By Dr. Armstrong, Indianapolis.

Mr. Nelson, from the Committee on President's Address, reported as follows:

Mr. President:

Your committee, to whom was referred the President's address, beg leave to report that they have had the same under consideration, and offer the following as the result of their conference:

While they concur generally with the President's statement on the several topics presented in his address, they desire to call the attention of the members of the Association to one or two matters therein mentioned, and to emphasize their importance in the opinion of the committee to the Shorthorn interests of the State.

We desire to call especial attention to that part of the address which refers to the subject of *pleuro-pneumonia*, and the measures adopted by the Governor of the State for establishing a quarantine against such States as contain infected cattle; and to suggest some action by this association looking to the continuance of the present quarantine until the danger from such disease is entirely removed.

Mr. Lockridge, from the committee to whom was referred the subject of revising the constitution, made the following report:

Article III to be amended to read as follows:

ARTICLE III. All persons becoming members of this Association shall pay the sum of one dollar at the time of such admission, and the sum of fifty cents annually thereafter, and such other sums as may from time to time be assessed by the Association, to be applied in the payment of such legitimate expenses as may be incurred by the Association.

The Committee on Revision of the Constitution offered the following report:

That Article II be amended to read as follows:

ARTICLE II. The membership of this Association shall be composed of all breeders of Shorthorn cattle, and those interested in their breeding, importing and disseminating throughout the State, and the county associations already organized, or that may hereafter be organized in accordance with the plans adopted at the January Session, 1886, each county association to be represented by one delegate.

Mr. Hargrove. I move the report be received only in part, and the committee be continued to next year to complete its labors.

DISCUSSION.

W. J. Quick. It seems to me a year is too long a time. The Secretary should have the constitution and by-laws and copy them into the records of the Association before the next meeting; consequently I wish to amend by saying this committee be continued, and recommend that they report in three months, giving them full power as to what the constitution and by-laws shall be.

S. F. Lockridge. I do not see how this can be done, as it is required to be done by a two-thirds vote of the members of the Association, and should be done by an aye and no vote.

Mr. Strange. I move that the committee be instructed to amend or make a new constitution and by-laws, to be submitted at the next annual meeting of the Association, and the present one remain in full force until its adoption.

Mr. Buckles. This committee has power to present a new constitution. If that is the case, it is not right to encumber the records with a power to amend.

The report was received, and the amendments embodied in it were adopted.

A committee of three was appointed to confer with the Secretary in regard to editing the column in the *Indiana Farmer*, which had been procured for the use of the Association. This committee consists of Judge Buckles, W. F. Christian and S. D. Buttz.

Mr. Smith offered the following resolution regarding quarantine regulations against the importation of diseased cattle:

Resolved, That it is the sense of this meeting that the quarantine against the importation of cattle into this State from neighboring States be continued as long as His Excellency, the Governor, deems necessary.

DISCUSSION.

S. F. Lockridge. Our Kentucky friends are sensitive about this matter. I have had conversation with some of them. While they think we are justified in what we have done, still they think we were a little late in doing it. I think any resolution offered and passed by this Association should say this quarantine should continue only until the danger from other States is removed.

Mr. Nelson. Mr. Strange's amendment is too strong. I favor the original resolution. In all due deference to the gentlemen, I move that the amendment be laid on the table.

Which motion was carried.

Mr. Robe. The question now comes up on the original motion. I move that the words "annual meeting," in the original resolution, be stricken out.

Adopted as amended.

RATE OF TAXATION OF SHORTHORN CATTLE.

Tipton County. Shorthorn cattle are assessed a little higher than common cattle.

Mr. Cotton. In Shelby County they are assessed as high as $75 to $100. Our cattle are assessed as first-class beef stock.

Mr. Clare, Fountain County. They are generally assessed about the same as other cattle.

Delaware County. One-third difference.

Hancock County. Assessed as other beef stock.

Mr. Lockridge, Putnam County. The Assessors have been liberal and have taken the ground that importation into the county is a benefit to the county.

Mr. Nelson, Parke County. I find that Howard and Parke are not paying much extra on stock. There is a difference in assessing all over the State. I do not think we should have our Shorthorns put down lower than the common stock of the State. I would not want my stock put down along side the little "mullet-heads" along the banks of the Racoon.

Mr. Buckles, of the committee to whom was referred the subject of employing an editor for the Shorthorn department in the *Farmer*, made the following report:

Mr. President: The committee to whom was referred the question of employing the services of the Secretary of this Association as editor of the Shorthorn department in the *Indiana Farmer* for the coming year, and the expense of publishing the Shorthorn Breeders' Directory of Indiana. Beg leave to report that they have had a conference with the Secretary upon the above subject, and that the Secretary agrees to perform the duties of editing said department for one year for such compensation as the Association may allow at the end of the year. We recommend that for the purpose of meeting the expense of compiling and publishing the Breeders' Directory, that each Shorthorn breeder of the State whose name, postoffice address and description of herd is inserted, be required to pay to the Secretary the sum of one dollar.

And we further recommend that the Association now appoint said Secretary as editor of said Shorthorn department to serve one year, and until a successor is appointed by the Association.

W. F. Christian,
S. D. Buttz,
J. S. Buckles.

DISCUSSION.

Judge Buckles. I do not know what the directory shall be, but suppose it is very much upon the plan of the Illinois and Ohio directories, which contain the constitutions of the associations and a brief history of the different herds in the State, together with the name of the breeder, for the use of the breeders throughout the State.

Mr. Sankey. If a breeder does not pay one dollar he will not be recorded.

Judge Buckles. If he does not get in the record we want to find the number of cattle in each county, but can not give a description.

The report of the committee was adopted.

S. F. Lockridge. I think it would be a good idea to have an executive committee to confer with the Secretary and assist him if we are going to keep a column full for a weekly paper, as it will consume considerable time. This committee could prepare articles and send to the Secretary, and he could use his discretion about insertion.

Mr. Nelson. That committee is not discharged. I move that they be continued to act as an advisory committee.

Mr. Buttz. Each member of the Association should consider himself an associate editor.

The Convention adjourned *sine die.*

INDIANA JERSEY CATTLE BREEDERS.

The fourth annual meeting of the Indiana Jersey Breeders began Tuesday, January 19, 1886. After the usual opening exercises, President W. J. Hasselman delivered the annual address, as follows:

This, the fourth annual convening of our society, brings us to a period in our existence that insures to us a continued interest and future prosperity. Upon the organization of our association, a few breeders of Jersey cattle united and determined to make it a medium through which our interests could be profited by a harmonious exchange of views and experiences; to this end we have been eminently successful; we have yet before us, however, a vast field to cover, as it is justly claimed the science of breeding the Butter Cow "is yet in its infancy." We have been fortunate to have had to commence with an already fully-established thoroughbred animal, as it is now about 100 years since the inhabitants of the Island of Jersey have been rigorously protected from the landing on their soil of a single alien bovine hoof.

Since about the era of our beginning, by the aid of mutual experience and co-operation, there has resulted a most commendable spirit of testing the butter capacity of our animals, through which the science of breeding finds a most important factor. We are thereby assisted to determine which families are the most profitable ones to breed from. The value of kinds, quality, and amount of food consumption, is being rapidly reduced to rules and facts. The general condition, capacity, and maintenance of appetite is more fully appreciated. With an advanced knowledge of capabilities we utilize the product of our lands in a more profitable way. In consequence we find the average butter returns of the Jersey cow steadily increasing. Her usefulness has latterly been further demonstrated by rigid analytical experiments, proving her to be the superior cheese-producing animal to any known breed.

We have within the borders of Indiana between 5 and 6 per cent. of all the thoroughbred registered Jerseys in America, and yet the Island of Jersey, upon an area of 5½ by 12 miles, supports five times the number that are in our State. The increase of popularity of the Jersey is demonstrated by the fact that the part Jersey or grade annual may be found in every county and nearly every township in Indiana, while twelve years ago the "little fawn cow" was looked upon with curious interest wherever found. The hardiness of the Jersey cow will be understood from the mortality reports for the past twelve consecutive months, from thirty herds, numbering 1,250 animals, between the ages of six months and ten years; the deaths from any cause whatever have numbered only seventeen, or equal to one in seventy-three. The matter of judges, judging, and the premium list at district and county fairs, protection from contagious diseases, and the quality of the animals thrown into public sales, should be discussed.

The Secretary reported a balance on hand of $17.48; due from various sources, $45, which was referred to the Auditing Committee and approved.

The Committee on Reduction of Fees for Registration reported in favor of the reduction suggested by the Iowa Jersey Cattle Club, viz.: $1 for female, for members of the A. J. C. C., and $2 each for non-members. The report was adopted.

Dr. C. W. Byrkett, Warsaw, Ind., whose name had been approved by the Board of Managers, was elected a member by unanimous vote, and his name ordered enrolled.

T. A. Lloyd moved that a committee of five be appointed to canvass the propriety of organizing a National Jersey Cattle and Dairy Show. President appointed H. M. Baum, A. Garretson, E. J. Howland, Sylvester Johnson and Dr. Levi Ritter.

The election of officers resulted as follows:

Amos Garretson, Pendleton, Ind., President; E. Howland, Indianapolis, Vice President; T. A. Lloyd, Secretary and Treasurer

Board of Managers: Term expiring January, 1887. Chas. L. Henry, Anderson; Col. S. F. Gray, Indianapolis; Samuel McKeen, Terre Haute; J. D Conner, Jr., Wabash.

Term expiring, 1888. Amos Garretson, Pendleton; Sylvester Johnson, Irvington; Alf. E. Taylor, Columbus.

THE CAUSES OF BARRENNESS.

BY DR. D. W. VOYLES, OF CRANDALL, INDIANA.

Sterility or barrenness in the cow may be due to either of two sets of causes. First, those that relate to the absence, in part, or imperfect development of the female organs of generation—the ovaries, the ovarian tubes, and the uterus. Second, to the diseased condition of these organs when fully developed.

Such is the profusion of nature in her endowments, that the first named set of causes rarely exist, and when they do, are of necessity incurable. The second set of causes, be they located where they may, are almost always due to inflammation of the parts at fault, or the secondary effects of inflammation in said parts.

The most prevalent seat of disease of an inflammatory character, acting as a barrier to breeding, is the mucous lining of the uterus. In most cases where barrenness occurs in a breeding cow—one that has brought forth offspring, but quits breeding before the proper age—inflammation of the lining, or mucous membrane of the uterus is the cause. Such inflammation may become chronic and give out a morbid secretion incompatible with the functions of breeding, by destroying the vitality of the male fluid. Or it may advance into the ovarian tubes and cause their constriction or actual closing, thus preventing conception; or it may produce the same effect on the opening at the mouth or in the neck of the uterus, producing stricture or closure of that part.

Cows that have garget, or imperfectly eject the afterbirth, often cease to breed afterward, due unquestionably to some of these effects of inflammation of the lining membrane of the uterus, or its neck, or of the ovarian tubes.

In primiparous cows—such as never have bred—I think the usual cause is closure or stricture of the neck of the uterus. This condition may exist independent of inflammatory action; may be due to rigidity of the neck from undue contraction of the circular muscular fibers existing in said parts, or to their spasmodic contraction.

I had a young grade cow of much promise cease breeding after first calf some years ago. She had garget fearfully. The swelling was not confined to her udder, but advanced along the latter half of the abdomen. I think in this case the inflammatory action was communicated to the uterus and to the lining membrane of the ovarian tubes, destroying their openings. I kept the cow three or four years, but she never bred again, although regularly served and in apparent healthy condition.

Imp. Jersey Prize, 1267, ceased breeding at ten years of age, remaining in a state of vigorous health three years longer, when she was killed for beef. After her last calf she did not do well, and her left hip shrunk away somewhat, as I was informed by her former owner. I have no doubt that the apparent deformity was due to increased weight of a thickened and swollen uterus pulling down in the lateral ligaments, and thus producing the appearance of shrinkage in that side, as observed by Mr. Kennedy, her owner. I think obliteration of the ovarian tubes was the result of such inflammation and the cause of her sterility, as I tried for three years every method that I could invent, without effect.

There is another set of causes of a functional nature, defeating successful breeding, that are more appropriately causes of abortion. In these cases the cow will conceive, but at an early period cast the embryo, at such an early stage of its development as to escape the most careful observation. Cows kept in a high state of flesh and allowed too little exercise are often barren from this condition or cause. Excessive accumulation of adipose tissue weakens muscular vitality, and when accompanied with want of exercise, produces a state of nervous excitability, both of which are strong predisposing causes of abortion.

In regard to the remedial measures instituted for the removal of these several causes much might be said. I can in this brief paper merely indicate a few of the most practical methods that at times will succeed, and again, in many instances, fail.

In heifers refusing to breed after fair trial, at the proper age, in which there is no appearance of diseased condition, upon the supposition that the fault lies at the neck of the uterus, I would reduce them in flesh before admitting service, confine them to a single service at each heat; if this failed, I would bleed copiously before service, and while under the relaxing effect of the blood-letting, admit the service. The application of extract of belladonna to the neck of the uterus for a day or two before the expected return of the service period, would tend to relax the opening of the neck.

The patulous or open condition of the neck greatly facilitates conception at all times. I have had a few cows take service two weeks after dropping a calf, and never had one that did so fail to have a successful service. The habit of letting a male of large size serve a small young heifer is a very reprehensible practice, particularly allowing repeated service. Disease of the neck is often produced by such excessive indulgence with over-sized males. These methods failing, in the hands of a competent man, instrumental dilation may be tried. For closure of the ovarian tubes there is, of course, no cure.

The treatment for inflammatory action, affecting the mucous membrane lining the uterus, must be rather of constituent kind. Mild, unstimulating diet, with laxatives for the bowels, together with warm water injections for the acute stage; and good, strong, vigorous feeding with tonics and moderate exercise for the chronic stage, discontinuing the service of the male for some months, and then admitting but a single service at any one service period.

For that class of cases where a functional cause is suspected, resulting in the casting of the embryo, a reduction of flesh and vigorous exercise will remedy the difficulty.

A NATIONAL JERSEY CATTLE AND DAIRY SHOW.

BY A. E. TAYLOR, OF COLUMBUS, IND.

Mr. President and Gentlemen of this Association:

As Jerseys are preëminently the dairy cow, a Jersey and dairy show go hand in hand. I first saw the idea of such a show suggested in the *Jersey Bulletin* some months ago, and "caught on" right away. Thought it would do more for the advancement of the Jersey interest than anything else that could be started. It would be something "new under the sun," and this is what the world is continually looking for. It would be just the right thing, too. Dairy cattle and dairy products. This is compatible. How preposterous the idea of a "fat stock and dairy show!" No other species of domestic animals has ever been so highly honored as to have a national exhibition of their very own. And what other so richly deserves such honor? I hold the cow as the greatest benefactor of the human race, and the greatest cow is the Jersey. She has clearly demonstrated her ability to produce more milk, butter and cheese on a given amount of food than any other. It is useless for me to speak of the numerous and well authenticated tests that go to prove this, or the blood lines that have combined to produce these grand cows. All this is well known to you; their names are as familiar to you as those of your own children. What has made them so intensely popular? It is not only their symmetrical form, their beautiful color and lovely disposition, but also their great usefulness, and that they will well pay for all feed and care given them. All it will require to make them universally prized will be to make them universally known. And how better make them known than to have a Grand National Show, where all the breeders and fanciers of fine stock in the world will be constrained to attend, through curiosity or admiration of this particular breed? All the Jersey cattlemen, dairymen and manufacturers of dairy machinery can show their goods and stock, which can be judged on their own special merits by competent dairymen. I have no ill feeling or word against fat stock. They are good and useful in their place. This is a big country, and there is room for many animals of many kinds, and "many men of many minds."

As iron sharpeneth iron, so the countenance of a man his friend; so we all feel it good for us to be here, where we meet congenial friends and talk of our common interests, and thus get our spiritual strength renewed. Now let us have a friendly and profitable discussion of this subject, suggest time and place for such an exhibition, ask all individuals and associations who are interested to coöperate with us in this matter, and memorialize the A. J. C. C. to give substantial aid from its well-filled coffers, and let us show to the world that there is solid bottom to this Jersey business, and solid men are there.

What a grand array of Old Nobles, Rioters, Alpheas, St. Heliers, Signals, and the descendants of a host of others equally as good perhaps, who have died "unhonored and unsung." I am not much afraid of ghosts, but it almost makes my bristles raise to think of the rattling among the dry bones of these old patriarchal Jerseys when the world witnesses such a glorious exhibition of their descendants.

There has been a lull in the Jersey business the past year. Although they have changed hands by the thousand, yet prices have ruled lower. This has been brought about by various causes. It has felt, somewhat, the general depression of business all over the country, and also the natural calm that must succeed such a storm of fabulous prices as were obtained for extra fine animals a year or two ago. Another thing: Wealthy dealers, whose pockets were bursting with the enormous profits of the trade, were wishing to retire, and were willing to dispose of the remainder of their herds at any price. Others, the proprietors of good working herds, have felt well satisfied with the condition of things in general, and themselves in particular; and, as the rich milk has been flowing continuously on, and has been sold directly, or creamed and churned, and the gilt-edged butter disposed of to appreciative customers at paying prices, they are content to pocket the profits and settle back in their easy chair, not caring to engage in the battle of breeds that has been going on around them. But, Jerseymen, the time for action has come! Wake up! and show your colors.

The advocates and fanciers of other breeds are in the field, seeking to take every advantage of the situation. We must keep pace, yea, we must lead the van! Our beautiful Jersey cow will hold the place she has so justly won. All hail! thou Queen of the Dairy!

And ere long the lion, who has always been called king of beasts, will surrender his title to the Jersey bull, and crown him "lord of all."

HOW BEST TO UTILIZE THE PRODUCTS OF OUR JERSEY HERDS.

BY MR. J. HENRY GEST, OF CINCINNATI, OHIO.

"How best to utilize the products of our Jersey herds," is the subject on which I have the honor to address you, and one which I have found so important to consider and so difficult to solve, in the management of my own herd, that at the outset I must confess to a feeling of hesitation in taking it up now, and to a regret that its discussion has not been assigned to some more experienced Jerseyman, from whose suggestions I might profit. Nor do I think it best to undertake to do more than merely outline the various ways in which the Jersey cow may be made profitable in the dairy, and to suggest some simple means by which her product may best be managed and disposed, giving merely the results got in my herd at Wintrebourne, Ky.

There are practically four branches of dairying in which the Jersey cow can be made profitable. Let us take these up in order, terming them cream, butter, milk, and cheese. It has been the habit of Jerseymen to claim but one of these four fields as the real stronghold of the breed, but within the past year has spread a very firm conviction that we have been claiming too little, as proof is being rapidly brought forward to show that the Jersey is not only the leading butter maker and that her cream product is not merely rich in butter fat, but that she yields annually a very large quantity of it, and that her yearly product of milk averages so well as to make her a decidedly profitable cow for the milkman, while recent trials in Canada, conducted by those who were either disinterested or even disposed against the Jersey, have shown her to be a first-rate cheese cow; so that taking her all around, the Jersey is entitled to a very high rank, if not the first, as a general dairy cow, especially when we consider the proportionately small amount of feed she consumes in doing her work. On this point of capacity I will refer merely to a few records, evidencing first butter capacity: Mary Anne of St. Lambert, 867 lbs. a year; Jersey Queen of Barnet, 851 lbs. a year; Eurotas, 778 lbs., and to the large number of weekly yields, numbering 1,000 or more, running from 14 lbs. to 46 lbs. In milk records, the best we have are coming from the herd of Messrs. Miller & Sibley, where Matilda 4th, 12816, yielded for the eight months ending December 1, 1885, 11,167¼ lbs., and was then still milking 40 lbs. a day, so that her yearly record is far from completed, high as it is. From numerous butter tests during these eight months it is estimated very conservatively, that she has produced 656 lbs. of butter for the period to December 1st. Another cow in the same herd, La Petite Mere 2d, 12810, milked 10,329 lbs. last year, and promises to do much better this season, probably 15,000. Fawn of St. Lambert milked 10,101 lbs. as a two-year-old. Ida of St. Lambert, 24990, with a butter test of 30 lbs. 2½ oz. a week, has milked 424 lbs. in 7 days, and is judged by Mr. Sibley to be capable of yielding from 18,000 to 20,000 lbs. a year.

Very few Jerseymen have yet paid much attention to the milking capacity of their cows, and it is to be hoped that these milk tests now being conducted by Miller & Sibley will arouse Jersey breeders to a sense of the importance of keeping milk records of their herds, a less difficult task than you may imagine.

I am not aware of the existence of any record of the cream product of a Jersey cow for a year, and can merely cite as proof of cream capacity, a record kept in my own herd, where 23 cows in milk, comprising two-year-olds as well as mature cows, produced in the seven months ending December 31, 1885, 23,265 pounds 12 ounces of cream, or over 1,000 pounds for each cow in seven months. Estimating the remaining five months, to June 1, 1886, by the product of last year, with due allowance for the decrease on the part of some cows approaching calving and the increase from fresh cows, I may reasonably expect that the annual product of the 23 cows will reach at least 30,000 pounds of cream, or an average of more than 1,300 pounds each. Nor is this the result of forcing in any way, as the grain ration fed in my herd is light, costing now in mid-winter only an average of five cents a day per head for the 23 milk cows, the weight being a little less than seven pounds of grain daily to each cow.

I hope the gentleman who is to follow me with an address on the "Jersey in the Dairy" will pardon this invasion of his territory for the purpose of showing the cream capacity of a working herd. Before returning to my subject it may be as well to say that the highest milk record I have got at Wintrebourne was 8,894 pounds, and that the herd for its seventh month in milk this season was still showing an average annual rate of 5,248 pounds of milk, while the actual average capacity of the cows in the herd is 6,000 pounds a year per cow, including two and three-year-olds as well as mature cows, and this is on light feed, with no attempt to produce milk records, but merely to get a sufficient cream and butter return to pay a dairy profit.

To return to the question of how best to dispose of our dairy product. The first point to be considered is the location of any particular herd with reference to a market. Here the judgment of each owner must decide whether he can find in some neighboring town or city a market for his milk or cream, or whether the dairy product must be worked up into some shape more easily transported to a market more or less distant from the farm. There is no location so favorable to the profitable management of a Jersey herd as the neighborhood of a large city, in which can be sold either the whole milk, or the cream of the herd. If you are on a railway line, your packages of cream or milk will be carried even a considerable distance at a fair cost for freight. Some roads issue coupon tickets good for a specified number of gallons, and to be attached to the can, where they are punched by the baggage master. These tickets entitle the can to be returned. By this means, providing you can secure customers who will send daily to the depot for their cans, or can make an arrangement for some responsible man in town to deliver them, you will be able to manage a milk or cream trade with little difficulty. Assuming these conditions to exist in your case, I would decidedly advise disposing of your dairy product in the form of milk or cream, or both, on account of the greater profit to be derived from them than from the sales of butter or cheese at such prices as are likely to prevail.

The hotels in any large city use great quantities of cream for ice cream, coffee and in cooking, as do all the restaurants, confectioners, bakers and ice cream makers, to supply whom a large quantity of cream is furnished every day by some dairyman, and only a very small proportion of this comes from the herds of Jersey breeders, to whom this large field should be particularly attractive. I do not know at what prices you can sell cream or milk in the cities near you, but in Cincinnati the price of cream varies in quality from 80 cents to $1.00 a gallon, while milk sells from 12 cents to 25 cents, according to quality. A little figuring will show that these prices are considerably better than you can do with butter. If you can sell cream at say, 80 cents a gallon, it is equivalent to selling butter at 40 cents a pound, assuming that you will average two pounds of butter from each gallon of cream if you make it into butter, and you will save all the labor of butter making, which is a very considerable item where you are obliged to employ some one to do that work. You may find some one hotel or restaurant that will take your entire product, which will not only simplify the shipment of it, but facilitate the collection of accounts.

There is also a demand for cheap milk, which your skim milk may satisfy at from 12½ to 15 cents a gallon. The milk against which this will compete, will be milk from slop-fed cows, perhaps even further diluted by water; and while there may be a small percentage of cream in this slop-fed milk, which is not in your skim milk, the purity of the Jersey skim milk, and its large per cent. of solids, aside from cream, will render it better for many uses than the other, and decidedly more healthful. In addition to the customers above alluded to, there may be some milk depot, or milk dealer in town to whom you can ship; or if you choose to take the trouble, you can work up a trade in bottled cream and milk by keeping it on sale at fancy groceries. All of these means of disposing of your cream and milk are merely offered as so many suggestions for your consideration. If you are going into the cream business, you will have to consider a great many things relating to its production and handling.

I can not undertake here to go into the question of feed, except to say that the quality of the feed has a strong influence on the quality of the cream, affecting not only the quantity, but the consistency and the flavor. Cleanliness is perhaps more necessary in making cream than in making butter, for it will absorb objectionable odors, if exposed to them, while the greatest care is required to prevent souring, which only a very liberal use of ice during nine months of the year will do. At Wintrebourne we extract the cream at once after milking morning and evening, by using a cream separator, and then submerge the cream in ice water in a Cooley creamer, which keeps it perfect until it is sent to town the next morning early. For shipment, I use a can provided with a water-tight jacket that fits around the neck and rests on the shoulder. This tin jacket is filled with ice and a tight lid put on. A similar arrangement, but in the form of a tray, is used to keep the necks of the bottles cool. The cans and bottles, when loaded in the delivery wagon, are covered with blankets.

While I have found the De Laval separator very useful in the dairy, my experience with it will not justify recommending it to you, unless you are prepared to use considerable care in running it, for there are parts in my machine at least that require constant watching, so that I have not been able to trust it to the average dairy hand.

If it is impracticable for you to market cream and milk, the only recourse is butter or cheese. It is the misfortune of the butter industry to have become sadly demoralized by the sale of spurious products made from tallow and lard, or even worse fatty substances, which are placed on the market under the name of butter, though at prices ruinously low for dairymen who have to compete with honest butter. The question of regulation, or prevention, of the oleomargarine or butterine manufacturer, is now attracting the widest attention. The attempts heretofore made to control it by requiring all packages to bear a stamp specifying their contents, does not seem to have met with any success. While the manufacturer may obey the law, there are middle men who evade it in many ways. As a last resort, many dairymen are now in favor of absolutely prohibiting the manufacture of these spurious butters, but unless it can be done on the ground of the public health, I do not see how the laws can justly be enforced against a manufacturer who admits the nature of his product and sells it for what it is.

There is another way to meet the issue, and that is simply to improve the quality of our dairy butter. That this change is already rapidly taking place there are many indications, most prominent among which is the steady support given by the public to creamery butter, which throughout the year sells on the market for more than the usual dairy butter, for the sole reason that it is more evenly good, more reliable as to quality than the butter brought in by the majority of farmers and many dairymen, who are too careless in their dairies. The public demands good butter, and will not put up with what is rancid, too salty, or oily from bad working. I know from experience that first-class dairy butter will outsell creamery butter, as I have repeatedly got from five to ten cents per pound, sometimes even twenty-five cents a pound, more for my butter than the ruling price for creamery. I know perfectly well that the extra price is for the extra quality, and that if I allow that quality to fall off, the demand will go with it. Before going into the cream business, a large portion of the butter made at Wintrebourne was contracted for at forty-five and fifty cents a pound, and there was every reason to believe that the entire product could, in time, have been placed at about those figures. I know of contracts made by hotels that had been buying creamery butter at a considerably lower annual average, to take the product of some dairy in which they felt confidence at thirty-five and forty cents a pound the year round. In the East, even higher prices are got by dairymen whose reputation for quality of butter is long established. If in the West butter sells lower than in the East, we must remember that feed costs less, especially hay. Where hay and grain are cheap there ought to be a profit in selling butter at twenty-five cents a pound.

It seems rather an old story to repeat how to make good butter, but if your patience is not exhausted it will bear repetition, for the making of butter has more to do with its quality than has the breed of the cows. Unless we start with healthy and appropiate feed, a clean cow, a clean stable, clean buckets, cans and dairy, a clean churn, plenty of ice or cool spring water, a thermometer, and patience, it is impossible to make first-rate butter. The cream from any one milking should be kept where it will ripen as quickly as possible, and as near 60° of temperature as is practicable. When the cream has soured, but before any whey has separated from it, which almost immediately follows its "clabbering," it should be churned if the best flavor is desired. The churning should be done by concussion and not by friction. The revolving churns or swing churns, all without paddles, are recommended. When the butter has formed into small grains, wash it thoroughly in the churn, allow it to drain dry, still in the granular form, then thoroughly work in the salt, which should be of the very best quality of dairy salt, as anything else is apt to spoil the flavor of the butter. Let it stand before working finally into packages. This allows the salt to dissolve and the surplus brine to be easily worked out. The butter must never be touched with a warm hand, and should be worked by pressure without friction in order to preserve the grain. Butter produced in this way, and supplied with regularity to customers, will command the highest market price. In some markets it is necessary to work the butter into prints. Where it was wanted in larger packages, I have found very satisfactory, small wooden boxes that are made in New York State. They are light, neat in appearance, have tight-fitting lids and are coated with wax inside to prevent absorption of oil from the butter. They are made in all sizes, from one pound up, and are sold for much less than crocks. By stamping the butter in one of these boxes its origin will be evident to all customers, who will value that brand.

The employment of the Jersey cow as a cheese maker is a subject on which I can give you but little information of value. The Canadian tests, which have been so ably presented to us in Mr. V. E. Fuller's letters, have shown that the Jersey is highly adapted to this branch of dairying, her milk being particularly suited to the production of cheese rich in cream as well as caseine, which is the class of cheese that commands the highest market price, and of which we import largely from abroad.

In the Canadian tests it was shown in London, Ont., that the average net cheese curd to the 100 lbs. of milk was 22.7 for the Ayrshires, 20.30 for the Jerseys, 20.02 for the Shorthorns and 16.46 for the Holsteins; but when we consider also the butter product of the Jerseys in this competition, the average total value of the Jersey for the butter, cheese and milk yield becomes 84.66, which advances her to the first rank as a general dairy cow, being followed in second place by the Ayrshires, with an average of only 67.18; third came the Shorthorn grades, 67.16, and fourth the Holsteins, 54.60. In this test, the Jersey cow Rose of Eden, from V. E. Fuller's Oaklands Herd, scored the highest number of points ever made, namely, 109.22, the second cow being an Ayrshire, with 83.85.

Later on, in Toronto, in a similar competition, the rank was:

1. Jersey.
2. Jersey.
3. Jersey.
4. Ayrshire.
5. Jersey.
6. Jersey.
7. Jersey.
8. Devon.
9. Ayrshire.
10. Ayrshire.

Showing an even greater superiority in the Jersey. The Holsteins were so badly beaten at London that their owners withdrew from the Toronto test, though they had shown no dissatisfaction with the mode of testing prior to the London

"Waterloo." Another series of tests was made at the Ontario Experimental Farm during 1884 and 1885, where the Jersey, though below the average of her breed, came out first for butter, cream and cheese, standing at the head of *twelve* breeds, including Holsteins, Ayrshires, Shorthorns, Guernseys, etc. The results were in *total solids*: Jersey, 14.65; Ayrshire, 13.53; Holsteins, 11.88. As it is a well known fact that the Jersey is the most economical consumer of food, her advantages as the profitable dairy cow is even greater than these figures show. These scientific tests, conducted by men of the highest standing for honesty and ability, clearly substantiate the claim that as a general dairy cow for profit, the Jersey is unequalled.

I can not see why, with a little experimenting in making different kinds of cheese, you may not hit upon some variety that could be sold profitably, possibly with more profit than some of us can make on butter. Cheese of the class of Neufchatel cheese and cream cheese are regularly sold in our markets at prices that will pay a handsome profit. Before closing I wish to refer to a branch of this subject of how best to utilize our dairy products that should receive your consideration, namely, that of co-operative dairying, which, if more extensively resorted to, might enable us to place our products with less trouble and greater profit. For instance, a number of Jerseymen combining would be able to support a milk, butter and cream depot in a neighboring city, through which to dispose of their dairy product. Similarly could co-operative butter making or cheese making establishments be started. I can not take time here to outline a co-operative system such as I have suggested. In closing allow me to thank you for your kind attention.

HOW SHALL WE BEST UTILIZE THE PRODUCTS OF THE JERSEY HERD.

BY MR. AMOS GARRETSON, OF PENDLETON, IND.

This is a subject very difficult to answer, to suit the wants of every Jersey breeder. We will take, as a basis, the intrinsical value of a good Jersey cow, regardless of pedigree.

The first product from a cow is a calf, which, if a heifer, is worth $150. To prove it is worth $150, take its mothers's yearly product (besides the calf), viz: a good Jersey cow will yield 350 to 400 pounds of excellent butter per year, besides raising the calf, which should be raised on skim milk after six weeks old. This at 26¼ cents per pound (average of the Elgin Creamery butter for 1885) gives over $100; call it $100 per cow for convenience. Take 15 cows (enough to keep one man busy) and we have $1,500 yearly product.

It costs about $50 to raise a calf to a cow, at which time it is worth $200, or 15 cows worth $3,000. So the annual yield of the butter is 50 per cent. of the value of the cow. Now add to the butter value of the 15 cows, $1,500, the value of the calves, say 8 of them heifers, at $150 each, and we have $2,700.

Deducting $150 for help, and $350 for feed (not raised on farm) we have a profit of $2,250, or $150 per cow.

I have counted nothing on bull calves, but should there be over half bulls they would surely bring enough to equal the deficiency of the heifers.

I have taken my standpoint strictly from the dairy products of *good* Jersey cows. Those that are fortunate enough to possess Mary Annes, Princess 2ds, Mother Hubbards, and the like, can count their products ten-fold higher.

Indiana Trotting and Pacing Horse Breeders' Association.

At the annual meeting of the Indiana Trotting and Pacing Horse Breeders' Association, held at Indianapolis on the 28th of January, 1886, most of the original members and several new ones were in attendance. All seemed to feel the greatest confidence in ultimate success, and expressed determination to work late and early for the objects of the organization.

The Treasurer's report was read and accepted. Mr. D. L. Thomas, as chairman of the committee appointed to interview the Indiana State Board of Agriculture and insist upon that body placing the light harness horse on an equality with draft and other classes in their premium list, reported. On motion of Mr. Thomas the committee was instructed to again call the Board's attention to the matter and insist upon a change.

On motion the following new members were elected: Gus Glidden, of Raleigh; L. W. Cobb, of Aurora; W. P. Ijams, of Indianapolis, and G. W. Morrison, at present residing at Oakland, California.

W. H. Wilson, of Cynthiana, Ky., being present, was elected an honorary member, and by invitation addressed the meeting. In the course of his remarks he paid the following compliment to the great old Indiana pacer: "Although George Wilkes, the finely bred son of Rysdyk's Hambletonian, who once boasted of the fastest stallion record, had beaten in round numbers the get of all other trotting stallions, he had failed to dethrone that mongrel-bred pacer—that despised cripple, Blue Bull. He is dead, but his name will live as long as lives the history of the American trotting horse. He was not only King, but he stands as Emperor of all speed producing stallions."

Messrs. George Gifford, of Tipton, W. P. Ijams and M. L. Hare, of Indianapolis, and F. M. Busby, of Lebanon, also addressed the meeting, urging the great importance of the Association to the horse interests of the west.

The Secretary read, by request (for the information of new members), the following, which was adopted by the Association, January 29, 1885:

CONSTITUTION.

ARTICLE I.

SECTION 1. This Association is formed to advance the legitimate interests of the breeders of the trotting and pacing horse, in Indiana.

SEC. 2. Its name shall be the INDIANA TROTTING AND PACING HORSE BREEDERS' ASSOCIATION.

ARTICLE II.

SECTION 1. The officers of this Association shall consist of an Executive Committee of fifteen members, from which body a President, a Vice President, a Secretary and a Treasurer shall be chosen.

SEC. 2. These members of the Executive Committee shall be chosen at the annual meeting of the Association, and shall hold office until their successors are duly elected. The Executive Committee is divided into three equal classes, and the term of office of the oldest class shall expire on the fourth Thursday of January, in each year. All officers of this Association shall be chosen by ballot.

SEC. 3. Members to replace the outgoing class, and to fill vacancies in the other classes, shall be elected by the Association at the annual meeting.

SEC. 4. A majority of all the votes cast shall be necessary to the election of a member of the Executive Committee, either to a place in the incoming class, or to fill a vacancy in either of the other classes.

SEC. 5. The Executive Committee is authorized to elect annually, from its own body, a President, a Vice President, a Secretary and a Treasurer, who shall hold office until the fourth Thursday of January in each year, or until their successors are elected.

SEC. 6. The President shall preside at all meetings of the Association and of the Executive Committee, and shall be the chief executive officer of the same.

SEC. 7. The Vice President shall preside in the absence of the President, and act as President in case of his death, resignation or refusal to serve.

SEC. 8. The Secretary shall keep the minutes and records of the Association, conduct its correspondence, and perform such other duties as may be required of him by the President or the Executive Committee.

SEC. 9. The Treasurer shall have the custody of all the funds of the Association, collect all dues, and pay out same on the order of the President. He shall make a report annually to the Association.

SEC. 10. The Executive Committee shall have full charge and control of the affairs of the Association. It shall meet on call of the President, or on the call of three (3) members of said committee, in writing. Five shall constitute a quorum. It shall make a report at the annual meeting, of its proceedings.

SEC. 11. Sub-committees to be appointed by the President and Executive Commitie, either from their own body, or from the members at large, and vacancies in such sub-committees to be filled by the remaining members of said committee.

ARTICLE III.

SECTION 1. The Association shall meet annually, on the fourth Thursday of January in each year, in the city of Indianapolis.

SEC. 2. Special meetings may be called at any time by the President, giving twenty days' notice.

ARTICLE IV.

SECTION 1. All breeders and owners, or those interested in the trotting or pacing horses in Indiana, are eligible to membership in this Association, if approved by the Executive Committee, who shall take into consideration the character and standing of applicant.

SEC. 2. Applicants for membership must be proposed in writing by at least two members.

SEC. 3. Those persons signing this Constitution at the meeting when it is adopted, shall be members of this Association upon payment of an initiation fee of ten dollars within sixty days, and subject to annual dues of ten dollars.

SEC. 4. Thereafter all members shall be elected by the Executive Committee, by ballot. Two negative votes shall reject an applicant.

SEC. 5. The dues of members of this Association shall be ten dollars each year, payable in avance.

SEC. 6. Any member remaining in arrears for dues more than three months, after demand by the Treasurer, may be dropped from the roll of members by the Executive Committee.

ARTTICLE V.

SECTION 1. The Executive Committee shall have power to censure, suspend, or expel any member of this Association for just cause, by a two-thirds vote of the members present, a copy of the charges having been first furnished to the accused, with an opportunity of being heard in his defense.

SEC. 2. Any member considering himself aggrieved by such action may appeal to the Association, when the proceedings shall be reviewed, and a majority vote may affirm or reverse the action of the Executive Committee in any such case. Any member expelled from this Association by the Executive Committee, and said expulsion confirmed by the Association, is forever ineligible for membership in this Association.

ARTICLE VI.

SECTION 1. At least one general meeting shall be held under the auspices of this Association in each year, at such date and place as shall be announced by the Executive Committee. Entries to be confined to geldings of five years old and under, and to mares and stallions of any age, owned, bred and raised in Indiana by members of this Association, or stallions or the get of stallions owned or stood by members.

SEC. 2. The pool box shall be prohibited at all meetings, and all forms of gambling.

SEC. 3. Entries shall be made in such classes and on such terms as shall be determined and announced by the Executive Committee.

The total entry money to form stakes to be awarded as follows: Fifty per cent. to the winner, twenty-five per cent. to the second horse, fifteen per cent. to the third horse and ten per cent. to the fourth horse; provided, that when but two horses start in a stake, only first and second money shall be paid; when one starts, only first money shall be paid. A horse distancing the field shall only be entitled to so much of the money as the starters in the race could have won.

SEC. 4. All matters of detail in relation to such meeting to be settled by the Executive Committee, of which timely announcement shall be made through the public press.

ARTICLE VII.

SECTION 1. The Executive Committee shall appoint, annually, five trusty and skillful men, who shall have charge of all questions relating to pedigree, and be designated as the Board of Censors.

SEC. 2. In all contested cases the Board of Censors shall keep a plain record of its proceedings and findings, and not only the pedigrees themselves, but all evidence substantiating them, shall be reduced to writing and filed with the Secretary.

ARTICLE VIII.

SECTION 1. The Executive Committee shall frame such by-laws for its own government, and for the government of the Association, as are, in their judgment, for the best interests of the Association, not inconsistent with this constitution.

ARTICLE IX.

SECTION 1. It shall require ten members of the Association present to constitute a quorum at each and every meeting of this Association. Votes by proxy shall not be received.

ARTICLE X.

SECTION 1. This constitution may be abrogated, altered or amended at any annual meeting by a two-thirds vote of the members present, or at any special meeting called for the purpose, if stated in the call of the special meeting.

The foregoing Constitution having been adopted this day, we hereby sign the same this 29th day of Jauuary, 1885, at the Supreme Court room, in the city of Indianapolis.

BY-LAWS.

I.

SECTION 1. Special meetings of the Executive Committee shall be called by the Secretary, on the order of the President, or on request of any three members, by written or telegraphic notice of at least six days.

II.

SECTION 1. Every member shall be entitled to one vote at all meetings of the Association.

SEC. 2. A majority of all votes cast at any election shall be necessary for the choice of any officer.

III.

In all public sales conducted by members under the auspices of this organization, the following rules shall be adhered to:

SECTION 1. That every head of stock advertised shall be offered for sale, unless the animal should have been materially injured by disease or accident after advertising, and before the sale.

SEC. 2. That no reserved bid shall be made on an animal, unless it has been stated in the sale catalogue, and the amount specified.

SEC. 3. There shall be no by-bidding in any shape or form.

SEC. 4. That neither the vendor nor his agent shall bid for another person, unless he produces at the sale a written order specifying the particular animal or animals that he is authorized to bid on.

SEC. 5. That every head of stock offered shall be sold if more than one bid is made.

SEC. 6. That all pedigrees shall be guaranteed, and where any doubt exists in regard to a pedigree, words shall be used to indicate the doubt, such as "said to be," or "believed to be," etc.

SEC. 7. That where an animal is unsound it shall be announced by the auctioneer.

SEC. 8. That a violation of these rules shall subject the offender to public expulsion.

IV.

SECTION 1. The action and proceedings of the Board of Censors shall at all times be subject to the review and control of the Executive Committee and of the Association.

V.

SECTION 1. The Treasurer shall receive all moneys belonging to to the Association and collect all dues.

SEC. 2. All moneys paid by the Association shall be drawn upon the warrant of the Secretary, to be countersigned by the President or Vice President.

SEC. 3. That the Treasurer be required to give a bond approved by a committee of two appointed by the President from the Executive Committee, in such sum as said committee of two may deem necessary for the faithful performance of his duties.

VI.

SECTION 1. That the money paid on entries in any of the stakes opened by this Association, wherein all the nominators fail to make final payments, shall be regarded as forfeited to the treasury of the Association.

VII.

SECTION 1. Members desiring to dispose of their stock may offer the same at public sale at the annual trotting meetings of the Association.

SEC. 2. Such sale shall be conducted under the direction and authority of a committee of three, appointed by the President of the Association.

SEC. 3. It shall be the duty of such committees to announce, not less than sixty days previous to each meeting, the terms and conditions of the sale.

VIII.

SECTION 1. A badge shall be prepared by the Treasurer, and furnished annually to each member not in arrears for dues, which shall entitle him to admission to all the trotting meetings of the Association for the year.

IX.

SECTION 1. That it shall be the privilege of any member to exhibit his stock at the annual trotting meeting of the Association, upon giving to the Secretary thirty days' notice prior to the meeting of such exhibition, and it shall take place at such time as the Executive Committee shall designate, and shall be under its control.

X.

1. Calling the roll.
2. Reading minutes of preceding meeting.
3. Report of Treasurer and Secretary.
4. Report of committees.
5. Motions and resolutions.
6. Unfinished business.
7. New business.
8. Nomination and election of officers.
9. Miscellaneous business.

TROTTING AND PACING RULES.

RULE I.

SECTION 1. In all stakes and trials of speed the rules of this Association shall control.

RULE II.

SECTION 1. All nominations shall be in writing in the name of the owner, addressed to the Secretary, enclosed in a sealed envelope, and plainly marked "Nomination," with a bank draft, postal order, or certified check for the amount of first payment; which envelope must bear the post-mark of not later than the day upon which the stake closes. A nomination by telegraph received by the Secretary before the hour of closing, and confirmed by a properly written entry, as above prescribed, posted not later than the following day, shall be deemed valid.

SEC. 2. The number of nominations by one owner is unlimited, but only one can start in a race.

SEC. 3. Nominations shall state the name, color, marks, age and sex, whether horse, gelding or mare, and the names of the sire and dam, if known, and her sire, if known.

SEC. 4. Nominations shall follow the ownership of the horse, provided notice of change of ownership shall be forthwith filed with the Secretary.

SEC. 5. All entries shall close at midnight of the day named, at the office of the Secretary, unless otherwise provided.

SEC. 6. Entries to be confined to animals foaled in this State, sired by stallions owned or stood in Indiana; providing, the owner of colt or owner of stallion, or the person standing stallion, is a member of this Association.

RULE III.

SECTION 1. All races to be in harness, mile heats, best three in five, except for two years old and under, which are to be mile heats, unless otherwise provided in the first announcement of the stake.

RULE IV.

SECTION 1. If four or more horses start in a stake race, fifty per cent. of the stake shall be awarded to the winner, twenty-five per cent. to the second horse, fifteen per cent. to the third horse, and ten per cent. to the fourth horse, except otherwise provided in the published conditions of the race. If not more than two horses start, only first and second money shall be awarded; and in the case of walk-overs only the first money shall be awarded, and it shall be optional with the Executive Committee whether the horse shall or shall not appear.

RULE V.

SECTION 1. A horse distancing the field shall only be entitled to so much of the money as the starters in the race could have won.

SEC. 2. In all races best two in three, the distance shall be eighty yards; and in all races best three in five, the distance shall be one hundred yards; except in heats wherein eight or more horses start, and therein the distance shall be one hundred and fifty yards.

RULE VI.

SECTION 1. The Executive Committee shall appoint three Judges of each race, who shall give notice from the stand ten minutes before starting the race, and five minutes before each heat thereafter.

SEC. 2. No person except the Judges, the Clerk of the Course, his assistants, and the timers of the race, shall be allowed in the stand during the pendency of a heat.

SEC. 3. The Executive Committee shall appoint a Distance Judge, and whenever requested by the Judge of the race, shall select one or more patrols.

SEC. 4. The Judges of the race shall have power and control to determine all matters in respect to the scoring and driving of the race, and its conduct after the appearance of the horses upon the course; and may, for the violation of their orders, or any unfair or improper conduct on the part of the owner, driver, or his assistants, impose fines and punishments as hereinafter prescribed; and may change the rider or driver of any horse, which, in their judgment, is not being driven to win.

RULE VII.

SECTION 1. For failure to obey the directions of the Judges during the progress of the race, a fine of not more than one hundred dollars, nor less than five dollars for each offense, to be paid at once.

SEC. 2. For foul driving, disorderly conduct, profane, abusive, or vulgar language, and for collusive or fraudulent driving, a fine as above limited; distance, suspension and expulsion, or any or all of such punishments.

SEC. 3. No suspension or expulsion shall be valid unless the ground thereof shall be at the time recorded by the Clerk of the Course, in the record of the race, and signed by the Judges.

RULE VIII.

SECTION 1. Three or more persons shall be appointed by the Executive Committee as timers of each race, who shall time the first and second horse in each heat; and the time of the winner of each heat shall be duly recorded; the time of the winners of a dead heat shall also be duly recorded, and the time of the second horse shall be recorded for reference.

RULE IX.

SECTION 1. In races of heats, best two in three, a horse not winning one in three, nor making a dead heat, shall not start for a fourth; in races of heats, best three in five, a horse not winning a heat in five, nor making a dead heat, shall not start for a sixth; and a horse not placed at the finish of a race shall win no part of the stakes.

SEC. 2. Whenever each of the horses making a dead heat would have been entitled to terminate the race had he won said dead heat, they only shall start again.

SEC. 3. A horse prevented from starting by this rule shall not be distanced, but ruled out, and shall be entitled to share in the stake according to his rank at the close of his last heat.

RULE X.

SECTION 1. The time between mile heats shall be twenty minutes, and in mile heats best three in five, twenty-five minutes; in two-mile heats, thirty minutes; in three-mile heats, thirty-five minutes, and in four-mile heats, forty minutes.

RULE XI.

SECTION 1. Only two races shall be in progress at one time.

RULE XII.

SECTION 1. In deciding the rank of horses other than the winner, their relative positions in each heat shall be conclusive, except when two or more appear equal in the race, when their rank shall be determined by their position in the last heat.

RULE XIII.

SECTION 1. In case of storm or darkness the Executive Committee or the judge of the race shall have power to postpone the same until the next good day and track, either before or after the race has commenced.

RULE XIV.

SECTION 1. The weight in all races shall be one hundred and fifty pounds, and shall be ascertained before and after each heat by the clerk of the course, and no rider or driver shall dismount without the permission of the judge; and any rider or driver not carrying the required weight shall be distanced, except the omission shall be fraudulent or shall be caused by some accident during the heat, or through the error of the clerk of the course.

RULE XV.

SECTION 1. For saddle, two feet and ten inches; sulky, four feet eight inches; wagon, five feet ten inches; teams, eight feet six inches.

RULE XVI.

SECTION 1. The positions of horses starting in a race shall be assigned by the judges as ascertained by lot, and thereafter according to their position at the finish of each heat.

SEC. 2. Positions may be changed during the heat in the discretion of the driver, provided the change shall cause no interference, except that after the horses shall have taken their positions in the home-stretch they shall not be changed unless to pass another.

SEC 3. In case of accidental interferance with another horse, by change of position, the horse so interfering shall be penalized by loss of the heat or of his position, and in case of intentional interference, the horse so interfering shall be distanced and the driver shall be punished.

RULE XVII.

SECTION 1. No horse shall go in a race at any other gait than that of the class in which he is entered; if through the fault of the driver the horse takes any other gait, he shall be distanced; if, without fault of the driver, the horse so often takes another gait than the one in which he was entered to go, or on taking it continues it so far as to render the contest unfair, such horse shall be distanced.

RULE XVIII.

SECTION 1. The age of a horse shall be reckoned from the first January of the year of foaling.

SEC. 2. Any owner or driver or a starter in a race may require a sworn statement of qualification of all horses in said race to be made under oath by each owner or driver before starting.

SEC. 3. Any person or firm detected in attempting to start a disqualified horse, if not a member of this Association, shall ever thereafter be debarred from any privileges of this Association.

RULE XIX.

SECTION 1. Any party aggrieved by a suspension or expulsion may appeal from the decision of the judges to the Executive Committee. Such appeal may be taken by serving a written notice, within ten days after the event, upon the Secretary of the Association, specifying the matter sought to be reviewed and the error complained of; provided, a written protest shall have been filed with the clerk of the course within one hour after the conclusion of the race, and provided, also, one member of the Executive Committee shall certify in writing upon the notice of appeal, that in his judgment there is good ground therefor.

RULE XX.

In all races of half-mile heats the same rules shall govern as are herein provided for mile heats, except as to distance, which shall be one-half that designated for mile heats.

The merits of the trotter can best be determined when measured by public performance.

A motion to amend Article 6 of the By-Laws, regulating eligibility to entry in the races given by the Association, called forth considerable discussion, and the article was finally amended to read as follows:

" Entries to be confined to geldings of five years old and under, and to mares and stallions of any age, owned or raised in Indiana by members of this Association, or stallions or get of stallions owned or stood by members; provided said ownership is bona fide for one year previous to making the entry."

On motion the following was adopted:

" Rule—That three entries be required to fill any stake."

The following gentlemen were elected to serve as Executive Committee during 1886: B. T. Buford, W. P. Ijams, A. C. Remy, D. L. Thomas and Geo. H. Gifford, and F. M. Busby was re-elected President, D. L. Thomas Vice President, A. C. Daily Treasurer and W. P. Ijams Secretary.

Adjourned *sine die*.

INDIANA WOOL GROWERS.

AGRICULTURAL ROOMS, INDIANAPOLIS, Jan. 28, 1886.

The Association met at 1:30 P. M., with President Thomas Nelson in the chair. The Treasurer submitted his annual report as follows:

JANUARY 29, 1885.

Amount received from S. W. Dungan, ex-Treasurer	$36 15
Received of J. W. Robe (dues)	1 00
Total	$37 15
Amount of disbursements	35 45
Balance in treasury January 29, 1885	$1 70
January 28, received of Secretary Farquhar in vouchers and cash	14 00
Amount of receipts, 1885	$15 70
Disbursements	12 27
Balance in treasury January 28, 1886	$3 43

JOHN L. THOMPSON,
Treasurer.

Secretary Farquhar submitted the following report, which was approved:

Received from membership fees and dues		$14 00
Paid on printing	$3 83	
Paid to Treasurer	10 17	
Total		$14 00

PRESIDENT'S ADDRESS.

Gentlemen of the Wool Growers' Association:

It gives me pleasure to meet you again in annual convention, and especially is it a pleasure to meet gentlemen who have the courage to leave their homes and come here and discuss questions relating to the merits and demerits of sheep raising, under all the discouragements that have befallen the lot of the wool growers in the past few years.

Yet I must be allowed to congratulate you on the possession of the nerve you exhibit in thus coming together and take it as an evidence that you do not consider the situation as entirely hopeless.

Let us look at the matter briefly and see whether in reality, the wool grower of to-day is in a worse condition than his contemporaries in other branches of stock raising.

A comparison of prices of cattle, hogs and sheep at the Chicago markets for four years, the first half of January of each year, shows as follows:

1883; cattle, $5.50 to $6.40; hogs, $6.30 to $6.75; sheep, $4 to $5.50. 1884; cattle, $6 to 7.25; hogs, $5.10 to $5.70; sheep, $3.50 to $5. 1885; cattle, $5.75 to $6.75; hogs, $4.20 to $4.70; sheep, $3.50 to $4.50. 1886; cattle, $4.50 to $5.50; hogs, $3.90 to $4.15; sheep, $4.25 to $5.

In this showing I have not taken the lowest price nor the fancy price of any of the kinds named, but have taken from medium to choice.

We are witnessing an era of low prices for farm products generally; yet I think it *can* be shown that the prices realized from the production of wool and mutton have not depreciated more relatively than other products of the farm—beef excepted.

A further comparison would show that, taking as a basis the prices obtained ten years ago, hogs have declined 50 per cent., sheep 20, wool 33, wheat 40, corn 40 and butter and cheese about 40 each; in these showings it will be seen that sheep have at least held their own in value as compared with other live stock, yet I did not hear our friends of the Swine Breeders' Association speak a word about quitting hog raising, neither do I hear that farmers are going to give up the business of growing wheat and corn or making butter or cheese; and so long as seed time and harvest (that has been promised) continues, so long will tillers of the soil produce wheat, corn, rye, oats, grass and hay and they in turn be made to produce beef, pork, poultry, mutton and wool for sustenance of man. Yet there is a *depression* in wool growing that is sorely felt.

The past year has been very severe on sheep raisers; the unusually long and severely cold winter had a bad effect on flocks generally throughout the State. And it was later in the season than usual before good mutton sheep that had to fattened on grass were ready for market. We are prone to attribute the depreciation in the price of wool as entirely occurring by the revision of tariff by act of Congress of 1883, which repealed the advalorem duty on wool.

I am by nature in favor of a tariff for protection to all industries, as well as for revenue, but the history of the past three years has seemingly shown that the depreciation in the value in wool can not be due entirely to the taking off of the advalorem duty, leaving the tariff of ten cents per pound remaining on certain specified grades of wool.

The reports of importation for the year ending June last of foreign wool, as compared with previous year, show a decrease of several million pounds; so it seems likely that the existing duty of ten cents per pound on unwashed wool will keep out of the country nearly all of the wool that would be kept out were the tariff of 1867 restored. I should deprecate the agitation at this time of a restoration, desirable as it might be, of a tariff on wool and woolens, as was in force under the act of 1867, as I should regard it a hopeless undertaking to appeal to a legislative body for additional protection to an industry that has twice elected an avowed free-trader its presiding officer, who virtually controls legislation in the appointment of its committees; but should favor instructing our representatives to labor zealously to prevent any further reduction of duties on imported wool, and if any change was made, to more evenly adjust the duties between manufactured woolens and the raw material.

Notwithstanding the increased production of wool in past years we are still importing annually wool and woolens aggregating forty-five millions of dollars, or about eight per cent. of the entire importation of foreign merchandise, exclusive of gold aud silver. Can it be that an industry such as wool-growing, that as yet so largely fails to meet the requirements of its people, will be abandoned or perceivably diminished so long as this state of affairs exists?

The careful business man deprecates too sudden or radical changes that affect his business; so should wool-growers deprecate any radical changes in the manner of breeding or feeding—I allude now to the common farmers, professional breeders will take care of themselves—noting carefully the result when any change is made in the manner or the selection of sheep for the breeding flock. Wool must be raised cheaper than it has been heretofore, not by keeping sheep at less cost for feeding, etc., though that is being cheapened, but by keeping better ones, and the future wool-grower will have to increase the quantity and quality of the wool produced, selecting the kind of sheep that will do this, and produce at the same time an excellent carcass of mutton at an early age, discarding and weeding out all that do not pay expenses, never keeping a sheep longer than it is ascertained he is behind with his feed-bill.

It has become an established fact that fewer assignments are made by sheep breeders than any other class of people, and that sheep breeders should be especially encouraged by these important facts. And the sheep breeder will find after a careful study of his business and intelligent management of his flocks, that after the year's sheep account has been squared, that if his feet had not golden hoofs, they had at least silver ones.

I have thus briefly given you a few thoughts as they have occurred to me, and in the fulfilment of a duty devolving upon the presiding officer of your association, not that I have expected that I could in any way impart any instruction to any member of this association, and though some of you may be younger in years than I, I recognize no one before me that I could not with profit receive instruction from.

Relying implicitly on divine protection that has been with us thus far on life's journey, and having hope of a continuance to the end; desiring and having a hope that our meeting together may be pleasant, and that we can say on returning to our respective homes that it has been good for us to have been together, and that disappointments and losses may occasionally be met with as *wool-growers*, we will not *give up* the *sheep*.

Mr. C. A. Howland not having prepared an address on "What Relation should Sheep Husbandry Sustain to Mixed Farming," as per assignment, spoke as follows:

There are some questions which weigh on my mind of which I desire to speak but a few moments. I have seen in some of the periodicals of the day certain paragraphs hinting at the expense of publishing the Agricultural Reports, and I have understood that certain State officers have also made similar expressions. I thought if publishing the Agricultural Reports was an unnecessary expense to the State I for one did not care to have a cheap essay published at the expense of the State, for in the opinion of those in authority it did not do as much good as the expense of publishing. I believe that the efforts of the stockmen who have been engaged in the business for many years would be valuable were they published and scattered over the State. A greater portion of the expenses of the State are borne by the farmers, and I can not see the consistency of periodicals throwing out disrespectful insinuations against this assembly. I feel it is high time we should begin to know and talk about who bears the burden of taxation, feeling as I do that the farmer pays a great deal more than one-half of the expense of the State Government.

If the signs of the times indicate anything to my mind they indicate the fact that for the next twenty years at least we shall not realize the prices we have received for our products for the twenty years past. The point I would make, and that which concerns us most, is, while our products tend measurably down in price, taxation tends measurably higher. It matters not particularly though the price of cereals, vegetables and stock are low when the farmer raises almost all he consumes. Ten years ago we received double what we do now for stock and produce. Taxes were less then than now. We want to meet as farmers and share the expense, and we should insist as farmers that they should stand at the head of our government, and shall manage the expense of the same in the most economic manner.

Farmers should see all the candidates for the Legislature and Congress, and give them to understand that they will not support them if they do not favor economizing expenses. A few years ago we had a Legislature which, I was about to say was charitable and benevolent; but the American people are so intense in disposition they go to extremes. They went to work and built asylums over the State which were not needed. It was a waste of money, and of this State management I fear they have overstepped the mark, and will make more paupers by so doing.

The farmers want officials to look after their interests and urge a more economic management than has been in the past. I can be happy on the farm if you don't compel me to do an unreasonable thing. I would rather pay money to the man who does the work, than pay in a roundabout way by taxation. Sheep raising should constitute one of the factors that enters into the elements of mixed farming. We understand by mixed farming that men are expected to raise both cereals and stock. In order to raise a good corn crop, the ground should possess the necessary elements to give that corn a vigorous growth. If you want to raise a crop of wheat, you can not succeed by sowing on ground, cropped year after year, without being properly fertilized. We must fertilize the ground in some shape, and the best thing to enrich your land is clover. What kind of stock can you pasture with clover that will enrich the ground most and produce the most money? and what kind of stock will consume clover hay and make the greatest compost heap, and out of which the most money can be realized? I answer, emphatically, sheep. In pasturing the clover, the droppings of sheep are more valuable than anything you can have on the farm. One man will take care of one hundred sheep with less trouble than eight or ten head of cattle. We can not get along without a few cows and hogs to eat certain things that would go to waste, but you can use sheep to consume clover pasture or hay. Clover can not be sold as well as timothy, and handling injures it. But you can turn that hay into wool and mutton and make a profit with less expense, and make a greater quantity of manure than any other kind of stock. If you have cattle, you have to provide shelter for them and confine their heads to prevent them from pushing with their horns, besides cleaning out the stable, which is a big job. We can turn one hundred head of sheep into an open shed, which is to clean out only once in a year, and then haul it direct to the field, which is more valuable than that from any other kind of stock. In order to succeed in mixed farming it is necessary to keep the ground under a high state of cultivation, which can be done by pasturing sheep better than any other kind of stock. They will destroy and consume various obnoxious weeds and briers, which you would have to grub or mow, and convert them into wool and mutton. I can raise a pound of mutton cheaper than any other kind of meat. That being the case, I would say it should be the aim of all men who are engaged in mixed farming, or contemplate such a move, to secure at least some twenty-five to one hundred head of sheep.

DISCUSSION.

Thomas Nelson, Parke County. The address was a good one, but should have been written so we could have had it before us.

J. L. Thompson, Grant County. I am satisfied that farmers, as a class, know less about the value of sheep they raise than any other kind of stock. I have had some culls on hand for which I was at one time willing to take almost any price; fed them up to within about two weeks ago, when I sold them for three cents per pound, weighing about ninety-five pounds, shipped to Pittsburg and cleared fifty-five dollars. The farmer knows just what a horse is worth, but is willing to sell a sheep at less than it is worth. It is necessary we should study these things up. There is a source of profit in raising sheep, much more than many seem to think.

Robert Mitchell, Gibson County. There is one point in Mr. Howland's address in regard to the complaint about publishing the proceedings of these meetings. I want to know where the complaint comes from. As Mr. Howland has remarked, the agriculturist certainly pays a large per cent. of the taxes, and the publishing of these reports is a part of that expense. When such reports reach our ears it is time this association should look after the matter. Usually the men who make these complaints are politicians and they don't want you to meet together and consult as to your own interests. They want to keep the agriculturists divided, and then they can handle them as they see fit. I want to raise my voice against any State officer, who may, to satisfy his political ideas, protest against the publication of these reports. Our State Board of Agriculture reports are sought for all over our State, and there is a cause for this. These associations bring out much practical information, and that being published in the report, the swine breeders, Shorthorn breeders, and members of other associations, take them up, read and find the experience of a life-time laid down in a volume, and profit by it. The farmers of our State are making a mistake when they put all their ground in wheat, it is a loss when it fails. Sheep and other live stock mixed will pay best. I am in favor of mixed farming; sheep are one of the animals of the "golden hoof." I want one-half of my farm in live stock and the other in grain.

J. G. Byers, Simpsonville, Ky. I have had some experience in raising sheep, and indorse what Brother Howland said. I am satisfied no animal raised on a farm produces as much manure and distributes it as evenly as sheep. I am satisfied my own land has been greatly increased in fertility by having sheep on it. My land will produce twice as much per acre in corn as some years ago. When wool got down to twenty cents per pound people quit raising sheep. They attributed this to the tariff, but the price has again advanced. Good wool in the East is now quoted at twenty-six to twenty-seven cents per pound. Those who disposed of their sheep at low prices have undoubtedly made a mistake.

Mr. C. F. Darnell, of Indianapolis, asked leave to present a brief paper in which he had outlined his views on certain practices in preparing sheep for the show ring, and being invited to present them, responded as follows:

PREPARING SHEEP FOR THE SHOW RING.

Mr. President and Gentlemen of the Indiana Wool Growers' Association:

I have a subject that I wish to bring before this body, which I am sure is of vital importance to the sheep husbandry of this State, which will not only bring to you the profits of breeding and raising sheep, but will bring to you a reputation as an honest breeder in whom all lovers of this stock can place confidence. I hope this subject which I am about to mention will be given a fair hearing.

1st. The habit of washing sheep for the show ring.

2d. The habit of clipping and trimming for same purpose.

3d. The habit of blocking and shaping the sheep to fill out all imperfections, so as to make it show up as near perfect as the shears and judgment of the owner will permit.

In the first place the washing of the wool takes out the oil and leaves it dry and harsh. In the second place, the process of clipping the wool causes it to stand out and gives the sheep a larger appearance than it really is. Third, when the blocking-out habit is adopted by an expert with the shears, he can produce a beautiful sheep which is most beautiful to the eye, deceiving almost the best judges. For instance, if the sheep's neck sits low on his fore-shoulders it can be shaped with the shears to bring it up almost to perfection. Again, if the sheep is flat and hollow behind the fore legs it can be made to show a round barrel, which is essential in a good sheep. If they are low behind the fore-shoulders and in the back, they can be brought up to 100 points if you will keep your hands off of them.

Gentlemen, you know as well as I do that this kind of sheep husbandry is wrong. This process of breeding by the shears, in clipping the sheep into shape which nature never intended, has deceived many a man who has been elated with our stock and our success in the show ring, which inspired him to enter into sheep husbandry. He buys our sheep at large figures that he may have the best stock to start with. At first he is delighted with his new enterprise, but as time passes by and his sheep fade away, and with all his feed and care he can not keep them up to where they were, he becomes disgusted with sheep husbandry and sells out at what ever price he can get and denounces his late purchase as a fraud.

Therefore, be it

Resolved, That it is the sense of this Association that this practice of washing, trimming, clipping and blocking sheep into shape should not be allowed by State, county or district fairs, but instead, sheep should be brought to the fairs in their natural state, and we ask the State Board of Agriculture, county and district fairs of the State of Indiana, to state in their premium lists that no sheep will be eligible to the show ring that appears there other than in its natural state.

DISCUSSION.

Robert Mitchell, Gibson County. That paper contains a practical suggestion. There are many deceptions practiced, especially in the show ring. A hog man is allowed to put his hog in fine shape. It would be folly to show rough horses and cattle, it would only insure defeat. We should bring our animals for the show ring by good feeding and proper care. This painting or guming as well as stubble shearing should be stopped.

J. L. Thompson, Grant County. So far as I have heard among exhibitors they are opposed to this method of preparing sheep for the ring. I believe in showing sheep in the most natural condition. This thing of stubble shearing is wrong, from the fact that many defects are hidden by it. If there is a depression in one place the wool is left a little longer there, while in others it is clipped closer to effect an evenness. It is right to clip your sheep and remove anything unsightly and improper just as well as to groom your horses or polish the horns of the Shorthorn cattle. At the Fat Stock Show, at Chicago, there was a fat steer there with his tail sheared smooth, and his horns polished. Some of those cattle that were exhibited there, where there was a depression in one place they would take a stick and rub the fat in that place.

Mr. Mitchell. Is there any deception practiced in washing the wool?

J. L. Thompson. Mr. Darnell is more familiar with that than I am, as I never have handled long wool sheep before this year.

C. F. Darnell, Indianapolis. Is it not hard to tell Shropshire, Southdown and Oxforddown apart? The Oxforddown is a long wool sheep. Don't you believe where a sheep is low on the fore-shoulder and you trim to bring him out, does it not deceive the man who buys him?

J. L. Thompson. I have trimmed sheep. If I show at fairs I shear my sheep about the first of April, close and smooth. We expect to trim in shape and smooth down in fitting for the fair. If a sheep is a little low on the back we get a line and work to that.

I. N. Cotton. Shearing the first of April a long stubble and showing in September, can you tell whether that long stubble was left on?

J. L. Thompson. I have seen persons who claimed to be experts that could. I do not think the common farmer can.

C. F. Darnell. Let a committee go into the ring that know their business. They will feel over the sheep, and if they find them low on the back and fore-shoulders, do you think the man should have the prize? If he decides in favor of that sheep he has been bribed.

J. L. Thompson. I am aware that outside pressure has something to do with the committee. We like to catch the outside eye, but a committee should not be governed by what they say. A man should go ahead and judge as he thinks and award to the animal he thinks best. We must know what a sheep is by handling. It has been my experience. I might take a sheep and trim him the best I can and if it is not right other ways I do not win. You don't breed on the shears; if he is not set on the legs right you can't bring that up with the shears. You can help in bringing the head up some. It may be wrong to wash them, but I know it is wrong to put yellow ochre on them.

C. F. Darnell. Yellow ochre don't deceive?

J. L. Thompson. Don't deceive! It is the worst thing you can do. Some put on soapstone and deceive the very elect. Yellow ochre makes the fleece compact, and the sheep looks better, but it is undoubtedly wrong.

Nixon Henley, Morgan County. I remember reading that some breeders think it a protection to the sheep in transporting.

J. L. Thompson. I never tried it at all. You can make it look nice. But it is of no advantage to the sheep.

C. F. Darnell. In importing sheep from England to this country they put on a kind of tar on account of the salt water. Did you ever see anything of that sort, Mr. Thompson?

J. L. Thompson. No, sir; I never saw anything of the kind on imported sheep. They put something on to keep the flies off, but it don't protect the fleece any.

Nixon Henley. I got the idea that it was a protection against the dust.

Robert Mitchell. In Scotland they have to do something of this kind in order to make the wool come together more firmly to ward off the rains just before winter. Those island sheep take all kinds of weather, and they have to do something of the kind.

Thomas Nelson. The matter to which Mr. Mitchell refers is perhaps new to some of you. In that country they do not use as much meat as we do, but keep a few sheep to kill in the fall and early winter. They have to be careful with their sheep there. If they let them run in the mud they would be sure to have the scab and be ruined. This mode of treatment was a preventive as much as anything in that country.

S. W. Dungan, Johnson County. I think that while an excessive fat covers up many defects in animals, so this blocking and clipping covers many defects in sheep. Yet I am thinking, Brother Darnell, you will have a difficult matter to get through a resolution over this body. I do not think it practical. I would not be in favor of anything that would detract from the beauty of our shows, but we can not show those short wool sheep to any advantage unless we do more or less blocking or shaping. It never has been done since my connection with any of our fairs for five or six years. I think it would be folly to get a resolution of this kind through. It is like this stubble-shearing, of which there is so much said at our fairs—that stubble-shorn sheep are not eligible to the show ring; yet they have never been thrown out. They say they are clipped short the first of April, and how are we going to get around this? Let all of us do the best we can in shaping up, making them as beautiful to the eye as possible, and the same with cattle. It is all right, and all the fairs allow it. The fattest animals always get the premiums, because the fat covers those defects.

Mr. Mitchell. Is there any deception in this clipping? You can see that the fleece has been run over. This gum is worse than clipping. There is no deception if you can see. If there is deception you have to do this in such way that a man dont't know it.

Mr. Beeler, Indianapolis. A man goes to the fair and buys a few sheep; these sheep have been fed and housed all the year and brought there fat; he takes them home and gives them ordinary care, and they run down and he feels that he has been imposed upon, when really, the fault is his own.

Mr. S. W. Dungan. A man who is a judge can tell by looking at the head, ear, muzzle and general shape of the head, the legs and distance from the ground; a man of any experience can tell. The clipping has nothing to do with it. A man who does not know anything about judging a sheep should get some one of his friends who does know to select for him. You can be deceived by the wool alone.

T. W. W. Sunman, Ripley County. If any gentlemen want to clip let them do so, and if any want to exhibit without clipping let them. We should leave this to the opition of the individual.

W. R. Goodwin, of Breeders' Gazette, Chicago. I do not know any thing about this matter, but I have been taught the way to judge mutton is by the hand and not by the eye. I am getting the idea here of judging sheep by the eye.

Nixon Henley, Morgan County. In this question there are many things to unfold. I have an incident in my mind where a friend was anxious to embark in the sheep business. He went to the fair and bought some Shropshires, which appeared beautiful to the eye. He was elated over his purchase, and kept them with extra care, and the next spring they were shorn, and revealed a very imperfect sheep. It is needless to say this man was not an expert in judging of the quality of sheep.

Prof. W. C. Latta, Purdue University. I am much interested in this discussion, but I must confess that I have been surprised from the expressions made this afternoon. It looks to me that every one of these societies should be an educational institution to better the condition of the public, but I take it for granted from what I have heard to-day that all our stock prepared for the show ring seems to be a deception. It could not be to the expert, but seemingly to the public. We want to take the public eye by cultivating the beautiful and artistic, but are we not misleading by this process we allow at our fairs? There are abuses in this thing of preparing for the ring, and perhaps the greatest in regard to sheep, from the fact of their heavy covering there is the greatest deception. I do not know whether you can carry this resolution through or not; if this reform is needed, to your credit it should begin right here. I am in favor of the resolution as I understand it.

W. D. Privett, Decatur County. I am opposed to the passage of this resolution, because it is impractical. This thing of clipping and washing has been practiced as long as I have known any thing about handling or showing sheep, and will continue to be practiced. Stubble shearing or leaving the wool long in some places and short in others is wrong, as is also coloring up and thickening fleeces by putting substances in, but as far as clipping and washing is concerned I have no objection, yet I do not see as there is any material gain in washing. There is an oil on the wool which adds to the lustre, which would be removed if washed. Where the fleece gets very dirty it is best to wash, but otherwise I would not. In regard to clipping sheep, America may adopt this rule and England may not. Many sheep breeders from the old country who show in this country clip their sheep before leaving England. These fleeces get ruffed up and you can't tell much about them, and it is an easy matter for one man to have an advantage over another. The State Board should leave the premium list as it is, and if England comes over we should have a right to shape our sheep up as nice as we can. Some sheep will carry their smoothness better than others.

Mr. Harkless. I think if our Boards would give premiums to the exhibitors of their own country, thus encouraging home talent, it would be more advisable. My worst competition is with foreign sheep showing against those of my own breeding. Those sheep raised expressly for exhibition, are prepared in warm houses, and they are the kind of sheep taken around through the country by peddlers wanting premiums. We should encourage home breeding and give the premiums to home breeders where they belong.

J. R. Tomlinson, Shelby County. There seems to be a discrimination I can not understand. I like the business of raising sheep. It is a great sin in the estimation of many of our members to stubble-shear and trim in the spring, to make the sheep look smooth after a while, trimming to the skin in high places and leaving it long in others. We go to our fairs and see sheep sheared close to the skin in some places, while in others the wool is three inches long. They were stubble-shorn at the fair pens. If it is wrong to shear in the spring, is it not wrong to shear in the fall? The judges are common farmers, picked up just before the show begins, and know nothing about the trimming process, and it is an easy matter for them to be deceived.

C. F. Darnell. I have attended many fairs and those who had the sheep in charge, if they saw you put your hand on them, would request you to desist. This handling will not hurt the sheep in the natural state. They follow right after the judges and smooth up the sheep again. Not one man in a hundred knows a good sheep. He goes there and buys the sheep, pays enormous prices and gets deceived. I am of the opinion that it does no good to wash the Cotswold, and, may I ask, does it do the Merinos any good? I hope the resolution will pass.

Col. Byres, Ky. I do not think it is the intention of any one to deceive any body. We prepare our sheep especially for the show ring. So do the cattle men prepare their stock. They sandpaper the horns and trim the tail. It is done with the mule and jack; it is done with all stock. The horse prides himself with a fetlock on. If I sell a man a sheep and deceive him, I will give him the price of two in the place of it.

J. L. Thompson. In my little experience I have found it difficult to deceive the public. In England they have strict rules, and we should adopt similar ones here. Their rules are that sheep shall have so much wool. He comes direct from the show ring, with four or five inches of wool, and hence is the sheep for exhibition. An expert passes, privately examining every sheep; if he finds one that is not eligible, he places over that pen, in large letters, "condemned," which remains there until the show is over. The way they deceive us, they take their sheep in January and trim them off, leaving them in the best possible shape, bringing them here with four or five inches of wool on, which will deceive the very elect.

J. B. Conner, Indianapolis. There is one phase not yet touched on. The resolution assumes, and the discussion regarding the resolution, that the preparation of sheep for the ring and fairs is to deceive. I appeal to any gentleman who shows sheep in the ring whether this is his purpose. Every sheep prepared for the ring should be as perfect as can be produced. If you deceive the buyer year after year they will stop buying of you. I think the resolution assumes what is not true. It is a factor in our fairs to cultivate the beautiful. When one is deceived he takes the consequence and endeavors to avoid a repetition in the future, by learning to discriminate as to what is a good animal.

Messrs. Beeler, Cotton, Harkless, Thompson, Privett and Darnell were appointed on Mr. Darnell's resolution regarding clipping and blocking sheep for the show ring.

Mr. Howland offered a resolution regarding an expression from a State officer opposing the publication of the essays as furnished by the State Industrial Associations, and the following committee, consisting of Messrs. Howland, Thompson and Dungan, was appointed to look after the subject and report the name of such State officer *for future reference.*

Messrs. Thompson, Byers and Harkless were appointed a committee on programme.

Thomas Nelson read the following essay on, "The Present Outlook of Sheep Husbandry, and Can It Be Made Profitable to the Farmers of Indiana at the Present Prices of Wool and Mutton?"

Sheep raising in Indiana, in common with most branches of industry, has not been as profitable of late years as in times past. We have an era of low prices for most of the products of the soil upon us, and it would be looking for something unreasonable to expect that sheep raising and wool growing would not, to some extent, meet with the same depression from which all, or nearly all, industries are suffering. Our neighbors across the water regard sheep raising as one of their most profitable pursuits. And they, perhaps, come nearer supplying the demand for mutton—and the Englishman dearly loves mutton—than any of the other meat products of their country. Then why should we regard the outlook for the future sheep raiser as anything but reasonably favorable, when it has been clearly demonstrated years ago by English farmers that there is a profit in keeping sheep when the price per pound for wool is very little higher than can be obtained on this side, even under the depression that we are now suffering, when they have there absolute free trade in wool, and the annual rental of lands on which this sheep husbandry is carried on is equal, or nearly so, to the purchase value of what would be regarded by English sheep raisers as the very best lands in our State for sheep raising if reduced to a proper state of cultivation for that purpose.

All lands are not adapted to sheep raising; neither are all lands and soils well adapted to the raising of wheat, corn, rye, oats, or the different kinds of grasses, but each peculiarly adapted to one, and sometimes more of the cereals named and of some of the grasses. Therefore, I should say that with proper care and management in the selection of location and other requisites, such as the party engaged in the business being a lover of sheep husbandry, and consequently an expert in the business, the outlook is at least as favorable as for the pursuit of any other of the contemporary industries.

To the other question, can it be made profitable at present prices of wool and mutton to farmers of Indiana to raise sheep? To this interrogatory I shall try and give an affirmative answer. One acre of land well set and well adapted to the growth of the grasses, such as blue grass, clover and timothy, and other good grasses, and under proper culture as grass land, will be amply sufficient to graze and otherwise feed—except a small allowance for grain, which will be alluded to hereafter—during the entire year, two sheep. And as was said in regard to the first question, the best sheep lands would not be of the most valuable kinds, such as some of the deep loams and black soils of Indiana, as on those soils it would not be the part of prudence to engage largely in sheep-raising as a specialty, but fine undulating lands originally either timber or prairie, well drained naturally or otherwise, and having sufficient of good flowing water—and only a small quantity would be required, so that the supply was permanent. The sheep loves and requires good water to drink, but none for the purpose of bathing, as he never indulges voluntarily in what a hog would regard a luxury, a bath.

Having indicated the kind of lands best adapted to sheep raising, we will proceed to demonstrate the feasibility of the affirmative to the question, valuation of the land to be $50 per acre. One acre of good grass land will, as was said before, be amply sufficient for two sheep, seven-eighths of this to be in permanent pasture, blue grass preferred, one-eighth in timothy and clover, or some other good hay-producing grass, to be cured as hay, to be fed during such times as the grass in the pasture aforesaid is not easily accessible to the sheep; at all other times he will have a sufficiency prepared by nature in the amount of territory allowed.

A ewe will yield annually 6 pounds of wool at 20c per pound	$1 20
And produce one lamb, value	2 50
One wether will yield 8½ pounds of wool at 20c	1 70
Growth of sheep one year 40 pounds, at 3¼c	1 30
Total	$6 70

EXPENSE ACCOUNT.

Interest on value of land at 8 per cent	$4 00
Interest on value of two sheep, valuation $6	48
Loss, other than might occur by dogs, 2 per cent	12
Value of grain fed as extra	50
Total	$5 10
This amount taken from receipts	$1 60

As profit above expenses, and the lands on which sheep are grazed constantly improving in fertility. Or to carry it out further, $375 as a profit, all other expenses having been fully met, on 500 sheep, and I think that it can be truthfully said that the keeper can have more ease in life, and be a gentleman of leisure more than the followers of any other industrial pursuit.

I have thus briefly tried to show what can be done by the average farmer, with sheep at the extreme low prices prevailing for the past year, and have not attempted to even hint at profits realized by the professional sheep breeder, as they are a class of enterprising citizens that I am not capable of addressing in an advisory manner.

DISCUSSION.

S. W. Dungan. I think one acre of land is sufficient for four sheep.

Mr. Thomas Nelson. In Indiana you can't make sheep fat without feeding some grain. I get most of my rules from the English habit of raising sheep. In Illinois they take four steers to the acre, and in England eight to the acre. I have put the number of sheep two to the acre in order not to feed much grain.

C. A. Howland. Mr. Nelson is too low in the number of sheep. If you raise clover it will keep three sheep all winter, and keep them fat.

Mr. Nelson. You can not make a sheep fat on clover alone.

Mr. Howland. I have had good luck on clover, and made them very fat—so much so that I have found it somewhat difficult to get them to market.

Mr. Nelson. These sheep were fed grain through the winter, were they not?

Mr. Howland. No, sir; but very little. Clover will keep them fat. During lambing time I give my ewes a little grain. I bought a few last spring that were very poor, and put them on clover and made them so fat that it was with difficulty I got them to market.

S. W. Dungan. This question of keeping so many sheep to the acre refers to grass. Mr. Quick has written to fifty or sixty breeders of sheep, and about forty said that seven could be pastured successfully on one acre of ground through the summer and fall. I would think one-half that number, or three sheep, would be right to take the year round.

T. W. W. Sunman. Mr. McGee, in his correspondence with about one hundred and fifty sheepmen, arrived at this conclusion: that one acre of thirty-five-dollar land would supply pasture for five head.

J. L. Thompson. There is one point we have overlooked. We say that three or four sheep are enough for one acre of pasture. If you put four hundred sheep on one hundred acres of land they will tramp the life out of it. Through the past year I have averaged twelve sheep to one and a half acres, and the pasture is nice now. As to increasing the fertility of the soil, there is nothing better than sheep; but it will not do to engage in raising sheep exclusively. We must have mixed farming as the ground would get too rich. The ground needs turning over. I had an old pasture; when I first began pasturing sheep on it, it would not produce ten bushels of corn to the acre; last season I plowed that pasture up and planted it in corn, and realized sixty-five bushels to the acre. It had been pastured with sheep for fifteen years.

I. N. Cotton. My observation is, we overstock pastures and lose more than if we handled less sheep and carried enough hay through to feed in the winter. It is always best to have a little extra pasture in the fall, than to run short.

J. R. Tomlinson. Do you graze clover during the breeding time?

I. N. Cotton. I have never turned sheep off on that account, and have had no bad results. The worst objection was having lambs run through it in the morning while the grass is wet.

W. D. Privett. My experience is, breeding sheep while they are running on clover there are no lambs, and the same is true of calves.

Nixon Henley. That is my luck exactly.

I. N. Cotton. Clover has some effect on the mucous membrane of the womb. I generally put timothy or blue grass with it.

FRIDAY—MORNING SESSION.

Convention met, President Nelson in the chair.

J. L. Thompson, from the Committee on Programme for the next meeting, submitted the following, which was approved.

PROGRAMME.

1. President's address.
2. "Social Relations Among Breeders Necessary to Advancement," S. W. Dungan, Franklin.
3. "Value of Root Crops in Wool Growing and Sheep Husbandry," Uriah Privett, Greensburg.
4. "Signs of the Times," Nixon Henley, Monrovia.
5. "The Common Farmer as a Mutton and Wool Grower," John McGaughey, Gallaudet.
6. "Obstacles and How to Overcome Them," J. G. Byers, Simpsonville, Ky.
7. "Fitting Sheep for the Show Ring," J. R. Tomlinson, Fairland.
8. "Grazing Different Kinds of Stock Together," C. A. Howland, Indianapolis.
9. "Distinguishing Characteristics of the Southdowns, Oxforddowns and Hampshiredowns," Martimer Levering, Lafayette.

DISCUSSION.

Fielding Beeler. There is nothing that compensates the farmer more than sheep. We should all have more or less of them on the farm. They are gleaners and will clear a farm of obnoxious weeds and briers. It has always been my rule to keep some on my farm. One of the greatest enemies to sheep is dogs which frequently commit great destruction in a short time. There is more danger from dogs and hunters near the city than farther out in the country. I think I have made more clear money off of sheep than from anything I have produced.

Mr. Nelson. I tried to show in my address that the common farmer could not make 8 per cent. in all invested in land and otherwise out of the low prices we have, and far below in the mutton and considerably below in the wool.

J. G. Byers, Simpsonville, Ky. Relative to the advance of price in mutton I notice in some paper there has been an advance of one dollar in the last month on mutton.

S. W. Dungan. It would be interesting for each member to tell the change in their localities since last year. Changes in the market generally affect the condition of sheep husbandry in their respective localities. Let us hear from you.

Nixon Henley. I do not wish to say anything against Brother Dungan's request, but we have a long programme. I think it would be wise to furnish that first, and then have a love feast.

S. W. Dungan. Will the various kinds of stock running together on the same pasture do well or not?

I. D. G. Nelson. Farmers generally raise more or less sheep for their own use, and only a few are real wool growers. I am not prepared to speak on this subject, and do not wish to occupy your time. It was my purpose to hear these questions discussed, and not to participate myself.

J. R. Tomlinson read the following paper on "Influence of Climate, Feed and Shelter on the Growth and Fiber of Wool:"

Wool is the natural covering of the sheep and of one or two species of the goat family; but wool, as we see it now, has been greatly modified by the domestication of the sheep. Indeed, it is not possible to determine, at the present time, from which one of four or five native breeds of sheep that are found on the different continents of the earth our domestic sheep have descended, or whether they may not be a cross of several breeds. The wool of all the domesticated stock differs from any of the wild breeds in several particulars, but especially in the fact that in all wild sheep the wool is more or less mixed with straight, stiff hair, much longer than the wool, after the manner of fur-bearing animals.

CLIMATE.

Mountains are the native home of sheep, wherever we may find them, but in the domestic state we have trained them to almost every condition and climate. The sheep has been the companion of man in all his wanderings over the earth, wherever he has developed any degree of civilization. But, though we may accustom the sheep to almost any climate, yet the effect of climate on the fleece is always distinctly marked. The fine wool of the Spanish Merino is the product of the elevated mountain regions of Spain and France. Roman writers speak of the fineness of Spanish wool nearly two thousand years ago; but they attribute this quality to cross-breeding with the Fezzen or African breed of sheep. This is not at all probable, as that breed, like all tropical sheep, has coarse, hairy wool. The fineness of the Spanish Merino wool may be fairly referred to the influence of a rarefied, dry mountainous air. While the scanty vegetation has diminished the size of the animal, the atmospheric condition has tended to render the fiber of the wool finer and softer. In Saxony, on the lofty plateaus of the mountains, we find a breed of sheep producing wool even finer than that of the Spanish Merino. It has been claimed that the Saxon sheep were original importations from Spain, but of this we have only circumstancial evidence.

The Russian fine wooled sheep are natives of the higher regions of the Ural Mountains. The wool is shorter than that of the Spanish or Saxon, but exceedingly fine.

From these instances we may infer that wool of a very fine fiber is the product of an elevated, dry climate. In general terms it may be stated that native wool in tropical climates is coarse and hairy. In arctic climates wool loses its softness and becomes harsh and rough.

FEED.

The quality, condition and amount of wool will depend much on the vigorous health of the animal producing it. The sheep is not a ravenous feeder, and is a little particular about the soundness and cleanliness of its food and feeding arrangements. A large clip of sound, healthy wool can be obtained only from a well fed, healthy sheep. If the animal is not in good health; if its food has been deficient in quantity, or faulty in quality, the fleece will be too light, and the fiber will be harsh and rough to the touch. In the summer sheep prefer short blue grass or clover pasture, but, for a change of diet, will often eat many kinds of weeds and briers that are refused by other stock. We must not only feed sound, wholesome food; it must be of the right kind if we expect to clip a heavy fleece. A sheep may be fatted on food abounding in starch and sugar, but wool can not be made of these alone. Its fiber is made largely of the flesh-forming elements. The blue grass or clover of the summer pasture yields this sufficiently, but in the winter oats, wheat middlings and bran should be fed with corn, if that grain is preferred. Sheep can be kept fat all winter on turnips and other forcing means, but it will be at the expense of the fiber of the wool. Abundance of rich food will increase not only the length, but also the grossness or coarseness of the fiber, thereby making it more suitable for combing and less adapted to the making of cloth.

SHELTER.

Summer showers do no injure sheep, but through the winter, and especially in a cold rain immediately after shearing in the spring, they should be furnished with shelter. Sheep do not demand close stabling at any season, but always require shelter from cold and extended rains. Wool frozen when wet becomes harsh and brittle, and its wearing quality is seriously injured. If sheep are not sheltered from the burning rays of our summer's sun, the fiber of the wool will be longer and coarser; also the same effect will be produced on the fiber of the wool when they are too closely housed.

DICUSSION.

Dr. R. T. Brown, of Indianapolis, being present, was invited to entertain the convention with a few remarks, and responded as follows:

I should thank the Wool Growers' Association for the privilege of addressing them and the many other courtesies received at their hands. Allow me to say that I have always been interested in sheep culture. I was a shepherd boy in my early years. We divided off to care for the stock. As far as I can remember, my father took charge of the horses, my older brother, William, took the cattle, the sheep fell to my lot, and my younger brother took the hogs. I looked after the sheep day and night, always seeing that they were penned from the dogs. To do this we invented a method which always succeeded. We had a high enclosure a dog could not climb; a shed running along one side of it, dropping down low, not more than three feet from the ground, covered with boards, running back fifteen feet, and had an elevation of six or seven feet at the outer extremity. A dog looking around on the roof would see the sheep, and just as soon as he jumped down he could not get out, and as soon as he found he could not get out he did not want any mutton; and we sacrificed every dog we found. It was an invention of my own. Wool is a substance which, in its chemical composition, resembles exactly horn or hoof of animals and nails of your fingers. It consists largely of the nitrogenous element or flesh-forming element; therefore, you have to feed such food as will increase the flesh. The mere fact that an animal can be converted into wool, a carbonaceous element is found in wool, but a great part of it is got from the flesh-forming element. If you have a good crop of wool you must feed something containing this element, and I know of nothing better than what was named in the paper. Oats, peas and beans are even richer than that, but we do not raise them much. Peas and beans constitute the richest vegetable matter we have in that form. Sheep, when they become accustomed to it, are fond of peas and beans. If you want a good clip of wool that is an essential food to give. The paper took the proper ground regarding the origin of wool, and of the sheep being a native of the mountain regions; we find it wild nowhere else. We find it in the Atlas Mountains of Africa and in the southwestern extremity of Africa around the Cape of Good Hope. They are found also in the Rocky Mountains of this country. The region of the Big Horn, in Montana, is worthy of the notice of sheep growers of this country. At the headwaters of the Yellowstone and Missouri rivers is the region where found in the greatest perfection. They do not seem to be found in the southern part of the Rocky Mountains, but a native of a region farther north. In their native state they will weigh three hundred or four hundred pounds. As they grow the legs, head, face, and also a portion of the trunk (the belly) is not covered with wool, but with long hair, longer than the wool, which is true of all wild sheep. The wool is of good quality, and, without doubt, the mountain sheep is worthy of our attention. There is no effort made to domesticate it or cross it in our breeds of sheep, and it is a question whether the cross would be prolific or in every way satisfactory. It is worthy of a trial at least, and I am astonished that some efforts have not been made to utilize the wild sheep of the Rocky Mountains. As to the domestication of the sheep, it is a plastic amimal and capable of accommodating itself to almost any condition of life. Wool will degenerate under certain circumstances. Fine wool, if not produced in the dry atmosphere of Spain and Carpathian Mountains, if taken into England in a moist climate will not degenerate much, but we see a slight difference between the English Merino wool and the Spanish. It is said that wool retains its natural qualities to a great extent, but I would not say it would rest that nice always; a thousand years would ruin the fine wool in England. A period of five hundred years in the Western prairies this side the elevated plains would degenerate fine wool. This can be proven by constant importations from higher regions.

Mr. Nelson. What would likely be the quality of wool from sheep raised almost exclusively on bluegrass, winter and summer?

Dr. Brown. Bluegrass contains the largest amount of flesh-producing element. Timothy, perhaps, comes next, but bluegrass stands in advance. I would prefer oats for winter feed. The sheep is ruminating and chews its cud. You must feed hay, with oats and other grain, to keep up something to chew the cud. The idea that cattle lose their cud! There is nothing in it; they get sick and fail to chew it.

S. W. Dungan. Would you feed corn ground, or not?

Dr. Brown. It makes no difference. The sheep chews its grain better than other animals, masticating all their food thoroughly; it mixes with the saliva better and is more digestible on that account; for this reason the manure is better. They grind the corn equally as well, if not better, than on the mill, and in the process it is mixed with the secretions of the mouth.

S. W. Dungan. They masticate the corn before going into the stomach?

Dr. Brown. Yes; the corn fed to sheep goes direct into the third stomach, and don't pass through the first stomach. It is then made into wads, and passes into the second stomach to chew. The grain fed by itself is masticated and goes into the stomach where the cud goes for chewing.

Mr. Harkless. What effect does rain have on wool?

Dr. Brown. Summer rains have a good effect. They keep it in a good, growing condition, but winter rain injures the fiber and health of the sheep. A rain such as we had yesterday, followed by a sharp blizzard, freezes the wool and it becomes brittle, and the fiber is easily broken and the quality impaired. Wool, though it does not deteriorate in appearance, you may keep twenty years and it looks all right, but it tells when you put it in cloth; it won't wear as long as new wool. You manufacture it into cloth and keep it on the shelf dry, and age tells on it; it has to be subtracted from its wearing. Cloth manufactured for ten or twelve years loses 20 per cent.

I. D. G. Nelson, Fort Wayne. The strength of the fiber by feeding is an important question; I learned that many years ago. I have bred for twenty years the Cotswold sheep entirely. I sold my wool to Boston buyers. They sent out a man to examine it. They were buying long wool for combing purposes and had got most of their supply from Canada. The stapler looked at my wool; I had at the time sixty or seventy fleeces, and thought they were in good shape, but when he examined them he threw several fleeces aside and said he did not want them. He showed me that the wool was weak; this he said was occasioned by not feeding well. Afterward I watched that more closely and found it to be true. Sheep should be well fed; it adds to the value of the wool. If I let sheep run on blue grass I feed some corn, peas and beans. I had not much trouble, and I generally got good prices, and sometimes I kept wool two or three years. By the deterioration of keeping we do not lose any more than the interest on the money. It will hold out its weight for a number of years. I have realized pretty fair prices for long wool for a number of years. I would keep the best to itself and put in no fleece from a sheep that had been unwell, but sold that for other purposes. Sheep raisers will find it greatly to their interest to see that their sheep are in good growing condition all the time; they get better wool and better prices where they make that a speciality. I always raised every thing we could grow on the farm, sheep among the rest; it was a profitable business, and feed has much to do with it. It is very unprofitable to feed ground feed; they can grind it cheaper than we can.

Mr. Hamm. Sheep are better adapted to some localities than others. Where there is a level country we seldom find many sheep. It is on the hilly portion where they are raised more abundantly. In our part of the country, in northern Indiana, it is too level, and a sufficient amount of pure water does not abound to make it a sheep-raising district; yet we have a few sheep. I would like to hear Dr. Brown's views on this subject.

Dr. Brown. I have already remarked that the plastical character of the sheep was such as to accommodate itself to circumstances. Make the sheep healthy, and if the country is dry enough to raise corn, you can raise sheep. One great *desideratum* is to have the land well drained; so far as the level country is concerned it makes little difference so it is dry enough to cultivate well and raise a good crop of grain. If it is too wet to raise corn or grass, fish would do better. [Laughter.]

S. W. Dungan. Sheep will accommodate themselves to circumstances in a great measure, but they will not do on level, undrained land. A dry sleeping place is desirable. To illustrate this, in 1865 I sold one hundred head of Southdown ewes. My farm is undulating and well adapted to sheep husbandry. The gentleman who bought these sheep lived on Blue River and had a large tract of land. He bought the sheep and paid me eight dollars a head. In a year from that time I was in the neighborhood and saw his flock. I could hardly believe it was the same flock of sheep, many of them had lambs and he had allowed them to run on the first bottom and no upland, and the result was, although perfectly healthy when they left my farm, two-thirds of them looked like they were diseased. Hence a man is making a great mistake trying to raise sheep on land not adapted to sheep husbandry.

I. N. Cotton. Was this land good for corn?

S. W. Dungan. It was Blue River bottom. He did not understand taking care of sheep, but the land no doubt had something to do with it. He had the idea that the sheep would take care of themselves, but there is no greater mistake.

J. G. Byers. Sheep don't like to get their feet wet and muddy.

C. A. Howland. Good bottom land that will produce blue grass will do quite well for sheep. I have first and second bottom and I frequently put them on the first bottom if there is plenty of grass there. But friend Byers is right, they dislike mud. Along the river is not bad for sheep, because they have access to pure fresh water. Black land is objectionable, for every time it rains it becomes muddy. If I had a farm of bottom land that would produce good grass I could raise sheep there, but they require rising ground on which to rest at night. Sheep are subject to malaria like the human family.

S. W. Dungan. Is there not more or less malaria along such streams as Blue River, in fact all streams where timbered?

C. A. Howland. No, sir, not along our running streams.

I. N. Cotton. Our bottom land through here that is suitable for corn I think would also do for raising sheep.

Mr. Beeler. I have had some experience in bottom land, having raised sheep there for forty years and done reasonably well in that time. If we can raise corn and grass on bottom land, sheep will do well there also.

J. L. Thompson. I live in a country where we have black, and some muck land, but no bottom land. While these places a few years ago were not good for sheep, now it is drained and sheep do well. On my farm we have hills enough for them to lay on at night. In the spring we find that sheep lay over tile drains, because the ground is warmer than other places. When the black land is underdrained we get vigorous crops of clover, which comes up over the sides of the sheep, and around the neck and head, which makes it unhealthful; we don't want grass to come up to the sheep's back. Where sheep are pastured on black land in connection with other stock they do well. After an experience of several years I find they will not contract disease of the feet on black land. A close thick sod is next to stubble to spread foot rot; it is a contagion which is only produced by coming in contact with the virus of a diseased sheep. Mr. Tomlinson says the fleece in the northern climate is harsh wool. My idea is that fur, hair or wool grown in a cold climate is finer than in a warm climate. I agree with the gentleman in all his remarks except that.

Mr. Beeler. Mr. Nelson spoke of keeping sheep healthy. Several years ago we had severe floods in this country, and I had to change my sheep to other pastures. I sold my wool the next year to Mr. Merritt. It was in bad condition, and would break easily. I lost five cents on the pound on that account.

Mr. J. L. Thompson read the following paper on the "Shropshire Sheep, their origin, together with their adaptation to the wants of the sheep raisers of Indiana."

GENTLEMEN—The subject alloted me is of great importance at this time on account of the increasing popularity of the Shropshire, and the great demand for a better *mutton* sheep. Farmers are anxious to know all that may be known about the history and adaptability of any new breed of animals that seeks their favor. As to their origin and history it is like that of most, if not all our breeds of domestic animals, shrouded in some mystery and doubt, for the reason that breeders of Shropshires as well as breeders of other domestic animals commenced to improve the original type without any very definite idea of the final result, and consequently kept no record of their work, the result being all that concerned them, of *course*. Again, as with most other breeds or races of domestic animals, we must look to England for their origin. And still again, as with other breeds of farm animals, to the county or shire for the name; so we find that the Shropshires originated in and took their name from the district or county of that name, *Shropshire, England.* Upon this, and that the original foundation was the Morfe Common Sheep, all accounts agree.

As we are compelled, in writing a paper of this kind, to depend largely on what others have written for our facts, and after examining every thing available, have concluded that we can not do better than to quote at length from a paper read by Mr. Mansell, before the Shropshire Breeders of England, and published in full in the third volume of English Shropshire Flock Book.

He says: "The Shropshire sheep is descended from a breed which has been known to exist in Shropshire and Staffordshire for upwards of a century." For Plymley, writing on the agriculture of Shropshire in 1803, thus describes this sheep:

"There is a breed of sheep on the Lougmynd with horns and black faces that seems an indigenous sort. They are nimble, hardy, and weigh nearly ten pounds per quarter when fattened. The fleeces, upon the average, may yield two and a half pounds." Again, Prof. Wilson, in his report on the breeds of sheep in the "Journal of the Royal Agricultural Society" Vol. XVI, states that when the Bristol Wool Society, in 1792, procured as much information as possible regarding sheep in England, they reported as follows in reference the Morfe Common breed:

"On Morfe Common, near Bridgenorth, there are about 10,000 sheep kept during the summer months, which produce wool of a superior quality. They are considered a native breed, are black faced, or brown, or spotted faced horned sheep, little subject to either rot or scab, weighing—the weathers from 11 ro 14 pounds and the ewes from 9 to 11 pounds per quarter, after being fed with clover and turnips, and clipping nearly 2 pounds per fleece; this appears to be the original stock from which the present breed of Shropshires has sprung."

Cannock Chase, in Staffordshire, was the "habitat" of a very similar but somewhat heavier sheep, from which many of the best Staffordshire flock of the present day are descended. Though some few writers state that the Southdown was used in the first attempt at improvement of the breed and to effect the removal of the horns, many men equally well qualified to give opinion adhere to the statement that the present uniformity of character and perfection of form is the result of selection from the best type of their own species.

No doubt some breeders, many years ago, *had recourse* to Southdown or some other short-wooled sires, but the result was most *unsatisfactory*, and nearly ruined the flocks that made the trial, they having in every instance to get rid of the progeny.

Two pioneer breeders must be noticed in any article relating to Shropshire sheep, viz.: Mr. Samuel Meire, of Berrington, but latterly of Harley, and Mr. George Adney, of Harley. Both these breeders did much to improve the original stock and for many years sold rams at remunerative prices, and, as a matter of fact, nearly every flock of repute at the present day contains much of the Meire and Adney blood. The recognition of the breed in the Royal Showyard at Gloucester, in 1853, was the turning point with the Shropshire sheep, and encouraged breeders to use their best judgment in selection, and do all in their power to place their breed of sheep in the front rank.

Shropshires were next seen at the Great National show in 1857, at Salisbury, and again in 1858 at Chester. Mr. Millward, in his report in the Royal Journal of the latter year, states that "the new class of Shropshires (184 animals) was very successful," but it was not until the following year (1859) that the breed was admitted into the Royal Agricultural Society's prize sheet and recognized as a distinct breed. Many years since, much used to be written respecting a want of uniformity of character and type among Shropshires, but now breeders may fairly be congratulated upon having established the character of the breed and the particular type to be aimed at, and though the exhibitors at the Royal Agricultural Society of England hail from so many counties, the uniformity of character is very remarkable. This, no doubt, has been achieved, to a great extent, by the breeders meeting annually at the Great National Show, and is also due to the fact, that the judges (who have been selected from among comparatively few breeders, and therefore have acted many years consecutively), have, as much as lay in their power, endeavored to fix the type.

Randal quotes Mr. Spooner as saying that the Shropshires were brought into national repute at the Shrewsbury meeting in 1845. Mr. J. Meire is quoted as having stated at a meeting of the Farmers' Club, in Shropshire (in 1858 or 1859), that sheep produced by the cross between the original sheep and the Southdown was well adapted for the Downs, but, for the enclosures of Shropshire, something more docile was required; consequently recourse was had to the Leicester.

Mr. Charles Howard, of Biddenham, Bedfordshire, in an address delivered before the London, or Central, Farmers' Club in 1886, said: "This breed has been established by a prudent selection of the breeding animals, and I learn from a gentleman who kindly favored me with information upon the point that the late Mr. Meire was the first to improve upon the original type. This he did in the first place by the use of the Leicesters. As their faces became white he would then have recourse to a Southdown or other dark-faced sheep.

"It was, however, left to the son to carry out and bring to a successful issue what the father commenced, and Mr. Samuel Meire, no doubt, may be looked upon as the founder of the improved Shropshires. This he accomplished, not, as is frequently asserted, by resorting to any of the established breeds, but by using the best animals from his own large flock."

In recapitulation, I think it is clearly established: 1. That the Morfe Common sheep were the original foundation of the present improved Shropshires. 2. That these improvements commenced about the beginning of the present century, whether by breeding the original stock together and selecting the best specimens and breeding for a fixed type, or by using Leicester and possibly Southdown to help improve the original, is not clear. 3. That they have been so bred and improved that they are now an established breed, and will reproduce themselves, is an established fact.

Shropshires are comparatively a new breed in America. The first importation is said to have been made into Virginia in 1855. The veteran importer, Simon Beattie, probably in 1859 or 1860, sent a Shropshire ram and two ewes to his father in Canada, George Miller, of Markham, Ontario, Canada. This is thought to have been the first importation into Canada. Mr. Miller is said to have bred these a few years, using the ram with his long-wooled ewes, and finally selling his whole flock of Shropshires, grades and all, to a Mr. F——, in New York. This I think is the first importation from which there are any descendants now known, and these are not considered elegible to record. They were first shown in this State at the State Fair in this city in 1874 by George Allen, Jr., and again in 1875, when he sold three yearling rams and three yearling ewes to parties in Grant County. These were probably the first Shropshires introduced into this State. These have done well; while not having built up large flocks of pure Shropshires, have *very greatly* improved the flocks of common sheep by the use of the Shropshire rams, having been the means of improving the sheep of the country to a very marked degree.

A great many pure and grade rams have been used in this and adjoining counties with uniformly satisfactory results. This has led to their being largely introduced into this part of the State. In fact, flocks of pure and grade Shropshires are being started in all parts of the State, and are giving, so far as I know (and I have had the opportunity to know something of almost every flock in the State), the best of satisfaction.

We take it that a very large majority of the sheep-raisers of Indiana are composed of the common farmers who do not make a speciality of breeding stud flocks, but keep a small flock in connection with a system of mixed farming. For this purpose no breed can excel the Shropshire. They are very docile and hardy, having close, compact fleeces that protect them from our inclement weather. The ewes are very prolific and most excellent nurses, and take the best care of their lambs. The rams are very prepotant, and when bred to the common ewes of the country, will in three or four crosses produce a type of sheep in many respects but little inferior to the pure breed, but of course can not be depended on for breeding purposes. The object should be to still farther improve, and this can only be done by the use of still better pure-bred sires. To give you an idea of what a "typical" Shropshire should be, allow me to again quote from Mr. Mansell's paper in Eng. S. F. B.:

"In describing what a Shropshire sheep should be, I can not do better than give the points which influenced the three eminent men, viz.: The late Mr. R. H. Masfen, Mr. John Evans and Mr. Henry Lowe, who acted as judges at the Bermingham meeting of the Royal Agricultural Society of England in awarding the prizes at this show. They say, in their report in the *Royal Journal*, that they selected for prizes those animals which they considered best calculated to uphold and perpetuate the most distinctive type of the Shropshires, namely, a well developed head, with clear and striking expression of countenance, a muscular neck well set on good shoulders, the body symmetrical and deep, placed as squarely as possible on short legs, due regard being paid to grandeur of style, a well covered head and wool of the best staple and most valuable kind, rejecting as much as possible all animals showing an inclination to produce black wool or dark skin." I may add as a rider to this description that the skin should be a nice cherry color, and the face and legs a nice soft black, not sooty nor a rusty brown, and free from all white specks. The belly also should be well wooled, and all inclination for the wool to peel at the jaw and legs should be avoided. These are minor points, but to insure success in the show-yard or remunerative result in the sale ring, they must not be lost sight of. No breed is so prolific, and with ordinary management when the ram is with the ewes and care during the winter, at least 50 per cent. of doubles may be looked for, though in many instances I have known a much larger crop.

Shropshires are not only prolific, but they are capital nurses, and I have frequently seen one of three take a leeding position at the annual exhibitions and ultimately prove a good sire, whilst, perhaps, the other two (his sisters) in due time formed part of the breeder's ewe flock. This shows that triplets from a Shropshire ewe can be reared successfully by the mother. Again, the Shropshire of the present day has all the quality of the Southdown, with considerably more size. It carries a large proportion of lean meat to fat, is light in offal and with good farming they come to market at eleven to fourteen months old, weighing twenty to twenty-five pounds per quarter, in some instances attaining even greater weights.

Another great point in their favor is their strong constitutions and their natural hardihood, for they will thrive and do well where any other breed can live.

DISCUSSION.

Thomas Nelson. If it has been analyzed, what would be the relative part of these that form the composition?

Mr. Thompson. All writers that I have met and talked with have been a little divided on that point. Mr. Mansell is well informed on the Shropshire, and in presenting an essay before the breeders of England he sets forth that they are produced by selection from the original type, the Morfe Common sheep. It has been my opinion up to reading his paper that the Southdown and Liecester had been used on the original Morfe Common sheep, but just how much I do not know. At the same time, there is no greater change made in the Shropshire than with Morfe Common sheep and Southdown, which is a long, slim leggy sheep running on the Downs of England. At that day a herd of those would look as little like the Southdown of to-day as the Shropshires of to-day look like the Morfe Common. The Oxford is understood to be the result of a direct cross of the Cotswold and Hampshire. The Hampshire is older than the Oxford.

S. W. Dungan. Is the Cotswold older than the Leiceister?

J. L. Thompson. I saw an article in the *Live Stock Journal,* taken from the *English Live Stock Journal,* giving this account of the Shropshire: During the time the iron and coal industries were developing there was a demand for mutton. The demand was greater than they could supply, so they went and bought ewes, bred them and marketed the lambs to the miners and machine shops. They kept bringing them in, and this writer claimed that the Shropshire built up in that way. They would get Bakewell rams and Southdown breeding, altogether keeping on until they need no new blood, and finally built up the Shropshire sheep. I have concluded there is not so much Southdown blood in the Shropshire as we thought.

Mr. Beeler. What is the amount of wool from the Shropshire?

J. L. Thompson. The Shropshire would probably shear from six to eight pounds. We frequently say seven to twelve, and I have had rams to shear as much as twelve. With the best of care I have had Shropshire ewes, five of which sheared 72½ pounds in the dirt, and after it was scoured and packed ready for the manufacturer, weighed 50 pounds. The first Shropshire I bought I got of Mr. Allen in 1875, and have bred ever since up to five or six years ago, and we thought after using the Shropshire we got better prices for wool than our neighbors in grade wool. This grade wool was produced on Cotswold Merino ewes. This makes as good fleece as Shropshire. Mr. Merritt's remarks were against the Shropshire interest, and they have sounded in my ears. At St. Louis wool buyers came around to examine our sheep. I called their attention to the quality of the wool, and asked them the relative value of it, and after careful examination they pronounced it first-class, and of the highest value of middle wool. After testing the strength and quality of the fiber they said they could pay 27 cents per pound for it. They are not perfection in fleece, and there is no other that is. A few years ago the wool of the Shropshire was harsher than now, but we are improving. While we are looking after the fleece it is also important that we should look somewhat after the mutton.

S. W. Dungan. Many think the Shropshire do not produce heavy fleeces. My experience is they are almost as heavy as the Cotswold. I have raised Cotswolds for several years. The fleeces from my two breeding rams, last year, weighed twelve and thirteen pounds, respectively; one was a yearling and the other two years old. I had something over twenty ewes, from which some of the choicest fleeces weighed ten pounds. This paper is in harmony with me on the subject, except my understanding is the Morfe Common sheep were first crossed with the Cotswold, which was the first and original cross. The Cotswold was an old, long-wool sheep in existence and afterward crossed with the Leicester, selecting an ideal type to breed up to, and I have no doubt there were several kind of sheep used.

Mr. Cotton. Both Cotswold and Shropshire may be improved for the common farmer by giving a little different raising. If we take one-fourth Merino, one-half Shropshire and one-fourth Cotswold, it will make a sheep that comes the nearest filling the needs. My lambs would shear twelve pounds.

Nixon Henley. We are assembled here as wool growers, and our interests are identical. We have different breeds of sheep. We should keep our flocks pure, and like many farmers of the county we can be benefited. By crossing, we can produce that sheep that will bring us the best price on the market in twelve months; in twenty-four months, another crop of wool and a carcass. While I am a great lover of the Cotswold, I find there is something to be gained sometimes by infusing a different blood.

J. L. Thompson. I have handled the Merino considerably. I attribute my success to having a Merino ewe and a Shropshire ram, with which we can produce a sheep for the common farmer, which, while not as good as pure bred, is in the possibility of the common farmer. We should teach him how to get it. In crossing I prefer taking a good carcass and smooth ewe. I do not want a wrinkled one for this purpose. We should not condemn any breed of sheep, we need all breeds under certain circumstances. The Merino is not as well adapted to the wants of the farmer of Indiana as other sheep, but we need a portion of them and we should work shoulder to shoulder in this matter.

Mr. Beeler. The remarks of Mr. Thompson are in the right line. I have advocated the idea, where a man has sheep doing well he had better keep on and not experiment too much, but work cautiously.

Mr. Nelson. Suppose you had a flock of half-blood ewes, the composition being Cotswold and Merino; you put on them a buck three-quarters Shropshire and one-quarter Oxford, would you be able to see any difference in the progeny than you would if the ram was pure blood Shropshire?

Mr. Thompson. Yes, I think so. That cross-blood ram would carry his type like the Shropshire. While we might get a good sheep for the common farmer, it would not be so good as the pure blood animal.

I. N. Cotton. When you breed a Shropshire buck to a Cotswold ewe you can't tell which the offspring will represent the most, the sire or the dam. It may be nearest a full blood Shropshire or a full blood Cotswold.

AFTERNOON SESSION.

Convention met at 1:30 o'clock, President Nelson in the chair.

DISCUSSION.

Mr. Williams. Two years ago I had a fine Shropshire ewe that quit eating moped around, seemed blind, and fell over. Upon examination I found grubs in the head; I took out eight between the eyes, between two bones of the skull. They all had cells to work in, and resembled a leech in elasticity. I put them in alcohol and they lived three hours. It is difficult to get medicine up the nostrils to destroy them. The mouth of the grub closing up would prevent any medicine striking that would destroy them immediately.

Mr. Nelson. Is this the same kind of bug frequently taken out of the upper back part of the head, in England, many years ago? Sometimes sheep would live and sometimes die after the bug was taken out.

S. W. Dungan. I think it is the same thing. This fly is the greatest enemy to the sheep, which is the insect that lays the egg. It is this fly that makes the sheep throw up its head and sneeze.

Mr. McGaughey offered the following, which was adopted:

Resolved. That this Association recommend to the State Board of Agriculture that the present classification of sheep at the State fair be continued.

S. W. Dungan. We have the Oxford, Hampshire and Shropshire down in the same class, which are quite similar. Those three show together. The Southdown is the oldest and most distinct breed of the Downs.

On motion, I. J. Farquhar, Nixon Henley and John McGaughey were appointed a committee to draft appropriate resolutions regarding the death of John H. Swales, of Logan, Indiana. They reported as follows, which report was adopted:

WHEREAS, We learn with deep regret that it has pleased an Allwise Providence to remove from among us our worthy brother, J. H. Swales, of Logan, Indiana; therefore, *Resolved*, That we deeply regret the loss of so good a man and valuable member of our Association, and that we hereby extend our sympathies and condolence to the bereaved family and relatives of the deceased.

Resolved, That a copy of these resolutions be spread upon the Journal of the Association, a copy sent to the family of the deceased, and a copy to the city press.

I. J. FARQUHAR.
NIXON HENLEY.
J. E. MCGAUGHEY.

Mr. Nelson. It has been suggested that the wool-growers have their meeting next year on the fourth Tuesday, instead of Thursday, at 10 o'clock A. M.

Mr. Beeler. I move that when we adjourn it be to the fourth Tuesday in January next.

DISCUSSION.

Colonel Byers, of Kentucky. I do not know what trimming and blocking means. We should use terms that can not be mistaken. I want some one to explain what we call "blocking."

Mr. Beeler. Trimming and blocking, as I understand, is cutting around some of the long parts of the wool where it may be too high to get it in shape.

Colonel Byers. I like the term "shape" best. I think it is a better word.

Mr. Beeler. I like that word, too. I think, perhaps, it would be better.

Mr. Byers. I want the term plain, so every one may understand it.

Mr. Tomlinson. I suggest the word "blocking," or "shaping."

Mr. Darnell. The word "blocking" is intended to show low on the fore-shoulder or low behind the shoulder.

Mr. Nelson. I can not see much in this from the beginning. A horse is trimmed to please the eye of the committee, and it was ascertained yesterday that cattle men have a way of moving fat with a stick to fill up depressions on the animal.

The officers for the ensuing year were elected, as follows:

President—Thomas Nelson, Bloomingdale.

Vice President—Nixon Henley, Monrovia.

Secretary—I. J. Farquhar, Winchester.

Treasurer—J. L. Thompson, Arcana.

Executive Committee—I. N. Cotton, Trader's Point; C. F. Darnell, Indianapolis; C. A. Howland, Indianapolis.

Mr. J. L. Thompson introduced the following resolution, which was adopted:

Resolved, That we, the Indiana Wool-Growers, respectfully suggest and recommend to the Indiana State Board of Agriculture, and all directors and managers of county and district fairs throughout the State, that they adopt and rigidly enforce the following rules and regulations for the government of the sheep department:

That all sheep shall be thoroughbred of the breeds represented. All sheep stubble shorn, and all with fleeces artificially colored, singed or filled shall be excluded from the show. All sheep shall be shorn not earlier than April 1, of the year shown. We recommend the appointment of an expert to go through the pens before the committee make their examination, and note on the entry-books all entries not complying with these rules; and it shall be the duty of the superintendent of the department to put up a notice that such sheep are disqualified from exhibition, and the sheep shall not be removed from their place during the fair.

C. A. Howland, of the committee appointed to investigate certain charges made by some of the State officers reflecting on the publications of the proceedings of the Industrial Associations, reported that efforts had been made to see said officers but had failed to do so, and asked for further time.

The convention adjourned until the fourth Tuesday in January, 1887.

SWINE BREEDERS.

The tenth annual meeting of the State Swine Breeders' Association met in the rooms of the State Board of Agriculture, January 27, 1886, at 1:30 o'clock P. M., and was called to order by President D. L. Thomas, of Rushville, Ind.

President Thomas delivered his annual address, as follows:

I wish to congratulate the Association that the tenth annual meeting convenes under so many favorable circumstances. While we are passing through a period of general business depression, swine breeders are cheerful and least complaining. Hog raisers generally are learning the importance of improved swine. They are realizing that when times are dull and prices low, they need to handle stock that can be grown and marketed with the least expense. Hence there is a steady demand for stock of improved breeds. But in order to the greatest prosperity we need to find out and remove, if possible, the obstacles in our way.

At the very threshold we are confronted with disease; and it entails greater loss than all other things combined. While I do not believe it possible to get entirely rid of disease among hogs, any more than to rid the human family of all traces of disease, yet I am fully convinced that there is no good excuse for four-fifths of the swine diseases that prevail every year. The mortality among hogs can and ought to be greatly diminished. The great prevalence of disease is largely maintained by two inexcusable causes, namely, *negligence and false conclusions* in reference to disease. The first is so frequently combated that I pass to notice the latter obstacle that hinders prosperity. The popular notion seems to be that there is *only one disease and one remedy.* That is, when a hog gets sick it has the "cholera," and a single compound will cure if the disease is curable. Many believe there is no cure for it. With this sort of view men sink down in despair, and either do nothing or follow an irrational mode of treatment. The way to a correct understanding and proper treatment is effectually blockaded. Hog raisers should bear in mind that hogs are subject to scores of diseases as well as mankind. I will mention some of the leading diseases: Fever, diphtheria, pneumonia, cold and cough, jaundice, measles, catarrh and catarrhal fever, thumps, dropsy, erysipelas, fatty degeneration of the heart, congestion of the lungs, liver, stomach, intestines and kidneys, and worms in either of these organs, tape worm, parasitic diseases, etc. This enumeration will suggest to every rational mind the utter folly of administering only a single remedy. It is cruel. First find out, if possible, what ails the hog, then make the treatment correspond to the disease. I have noticed that, as a general rule, *doctoring is a failure.* When there is an epidemic an effort to cure can not be a success. In the first place, it is common for hogs to be sick several days before the owner finds it out. Then it may be he learns it by seeing the buzzards flying above the dead hogs. Other duties are pressing and he lets the matter rest a day or two, till he finds more leisure. Then he can't handle them like horses, and there are too many sick hogs to receive special attention. And perchance, not knowing the nature of the disease, a "sure cure" is placed before the hogs to eat or leave, as they choose. It is not often that sickness in hogs is detected as quickly and treated as carefully as in the case of a sick horse. The reasons are manifold. Hence, the importance of keeping hogs in good condition. Another obstacle in the way of successful swine culture is *want of organization* and a lack of disposition among hog raisers to aid in the investigation of diseases. As a rule, men prefer to risk losing all their hogs annually rather than donate the proceeds of one pig for the purpose of experiment and investigation. People wait, hoping others will do the work and they can receive the benefit gratis; or are governed by the old saying, "what is everybody's business is nobody's business." Hence, the burden and expense falls upon individuals, which necessarily causes slow progress. Another fallacy is that *inbreeding improved swine* is the main cause of disease. It is strange that intelligent men urge such an absurdity in the face of plain facts. The claim that inbreeding improves hogs is not true to begin with. The various record associations afford breeders the ready means of selecting out-crosses. They consult the records of pedigrees, and often send hundreds of miles to secure infusions of fresh blood; so that there is less inbreeding of improved hogs than there has been among hogs since the flood! The old style is to select the thrifty male of the herd every year, so that the most complete incestuous breeding is pursued indefinitely. And, to cap the climax, the scrub hogs of the forest have succumbed to disease as readily as the most highly improved hogs. Again, these enthusiasts fail to show that inbreeding is detrimental. They simply make an unsupported charge to prejudice people against the improvement of their hogs. While my prejudices are against inbreeding, I must ask theorists to wrestle with the case of Stephen Atwood, the founder of the celebrated strain of Atwood Spanish Merino sheep. He bred in the same family of sheep from 1813 until his death in 1867; and instead of it deteriorating his flock, it became famous for its marked improvement. And a large percentage of horses on the turf that have shown great speed and power of endurance, have also exhibited inbreeding in their pedigrees.

THE CORN DIET THEORY

Also claims attention. Its advocates allege it is the cause of "hog cholera." They ride this hobby until farmers sometimes feel almost afraid to use the best ration ever fed to a hog. Those hobbyists forget to look to the south and southwest where hogs sometimes die so rapidly that as many as ten are found dead in bed at once. And, too, those hogs had never subsisted on corn. In many cases they had never had a feed of corn in their lives, and were only half domesticated.

And recently there have been serious outbreaks of swine fever in Canada and England where corn is scarcely known as a diet. Such facts prove that the corn diet theory is a hallucination. But the *most popular fallacy* is, that healthy hogs coming in contact with dead hogs or eating the organs of flesh of affected hogs, is the most effective way of spreading the disease. But a few years ago farmers believed that proprietors of rendering tanks poisoned their hogs, or passed along highways and deposited pieces of diseased flesh where hogs had access to the same so they might obtain a bountiful supply of dead hogs. Farmers also believe that hauling dead hogs along the highways spread diseases. But experience, the greatest of teachers, has opened their eyes, and those living near grease factories do not complain of transportation of dead animals. But while daily observation is wearing away these delusions among the masses we find our scientific men sticking to them with remarkable pertinacity. Indeed it is always very difficult to induce experts to alight from their hobbies. Possibly a sort of professional pride prevents their dismounting. Hence, if they make a mistake (and they are just about as liable to make them as other people) they hold on until the last prop is knocked from under them. The case in hand is a fair illustration. Veterinarians and experts have been a benefit to us, but at this particular point they are a detriment. Their erroneous contagious theory has been exploded, but their adherence to it, from government officials down to the general practitioners, hinders the world at large from arriving at a correct understanding of the matter. Scientific investigations can not outweigh the experience of intelligent and practical men. If they clash it is when scientific men have blundered And I here introduce a letter from a reliable gentleman which certainly will lead those experts to reconsider their contagious theory and place it upon a more rational basis.

COLUMBUS, IND., January 20, 1886.

DEAR SIR—I have been engaged in rendering dead animals for fifteen years, and am proprietor of three factories located at different points. Since I commenced the business not less than 300,000 to 400,00 hogs and pigs have been rendered at my factories. They died from all kinds of diseases that hogs are afflicted with. In the meantime I have kept hogs and raised a lot of pigs each year, and they ran in the lots that enclosed my factories and had free access to the offal, and ate the liver and lungs of hogs that died from every variety of diseases; and during all that time I have never had a case of "hog cholera" among my stock. But my hogs have always been uniformly and uncommonly healthy. They have every possible chance to contract swine disease, but have escaped. Scores of men living near my factories will attest these facts. Yours respectfully,

WM. SMITH, JR.

This statement will also help check the ill-founded abuse of rendering tanks. And from what I have submitted, you will perceive that we need a reasonable sum appropriated by Congress to be used by practical hog men in making experiments and collating demonstrated facts. If we can not eradicate the mass of popular delusions, let us prepare a book on *swine mythology.*

James Mustard, of Broad Ripple, read the following paper on

WINTER MANAGEMENT OF BREEDING SWINE.

Mr. President and Fellow Swine Breeders:

Your Committee on Programme for this yearly meeting have assigned me the subject of "Winter Management of Breeding Swine." You certainly do not expect of me a learned or highly finished literary effort. If so, you will be mistaken, for I am a plain, blunt man, and unaccustomed to such a task as you have laid upon me. Nevertheless, I suppose upon a subject of so much importance, I may be able to give you the benefit of several years' experience, and in that way break the ice, and, as it were, make an opening for my brethren to follow in and give the meeting a flow of ideas. I may say, as a starter for your consideration, that the man who can successfully manage his breeders during a long cold or changable winter, need not loose much sleep as to how he will get along the rest of the year. For my own convenience, I have divided this subject as follows: (1) Feed and shelter; (2) handling, which includes coupling, farrowing, etc.

I do not know that I shall be able to follow these headings strictly, they are only guides to keep me straight, or nearly so. Now, as to shelter, I do not think it best to house too many sows together, so I prefer a number of small sheds or houses to one or two large ones. I make my sheds 8x8 feet with shed roof, the highest or front part facing south, which I make seven feet, and the back, or north part, 4½ feet high. The north, east and west sides are closely boarded up to the roof; on the south side I board up 3½ feet and leave 3½ feet, which is put on hinges, so that I can, when I desire, drop it down to admit sun and light. In addition, I board up inside all around, except where the large drop door is, and in the space between the out and inside boards, I fill in straw, cut fine. The floor is inch stuff, laid in on 2x4 scantling, so as to leave a space of four inches between the inside and outside walls. The roof frame is 2x6 and covered with plank or shingles, as you may prefer. A small door for sows to go in and out is made on the south side and near the east corner, and may be hung on hinges, or, what is better, in a slide. There should be a sufficient number of these sheds or houses, so that not more than four sows should be required or allowed to occupy each one; and better still if but two, or even one sow to the pen. To convert these sheds into farrowing pens or sheds, I place on the inside a board nine inches from the floor and twelve inches from the inside wall. This furnishes a retreat and protection for the pigs, and in a great measure prevents overlaying when the pigs are young. In front of the sheds I use and recommend a floor outside on the south of not less than two feet, and four feet in width is still better. This prevents mud from accumulating at the door, and makes a nice place for sow and pigs to lie in the sun on pleasant days. I frequently build two such sheds as I have described, side by side, and if you prefer you can make a little room three or four feet wide between the two, where a small stove may be placed.

Now, some persons may be curious to know why I prefer sheds such as I have described to one large hog house; to such I will say that the following are some of my reasons: When a number of sows with young pigs are kept closely together, if one sow happens to step upon or hurt one of her pigs it excites all the others and they are up tramping around, and in that way kill their own. Again, if disease should enter your herd, it is easier to fight it when the animals are under separate and somewhat distant shelters, than if all were huddled together; but the double pens do not present such difficulties as I first mentioned; if the sows occupying them have been sleeping together, each seems to and does undoubtedly know the voice and grunt of the other, and hence causes no uneasiness or alarm. In addition you can have more lot room with small sheds scattered about, than with one large house, and the larger the lot the more room for exercise, which is an important element to be provided for. Next we will consider bedding. I prefer dry wheat or rye straw or dry leaves, corn husks or dry prairie hay. I do not like oat or buckwheat straw, clover or timothy hay. The quantity of good bedding is to be determined by the size and number of hogs and temperature of the weather, and when the bedding becomes either wet or dusty, remove it, sweep the floor and sprinkle lightly with strong solution of carbolic acid.

Feed and manner of feeding will be next considered. First, character of feed for sows. I use corn, corn meal, ship-stuff bran, oats, wheat, pumpkins, potatoes, cabbage, etc., and the grain and vegetables should be sound and free from must or decay. Pumpkins should be fed rather sparingly, and the different kinds of feed should be changed, that is, feed shorts, corn meal or oats in the morning, potatoes and shorts or ground wheat at noon, and whole corn at night, and pumpkins two or three times per week in moderate quantities with corn; if you prefer, feed three times per day, but twice per day only in winter is my custom. I mix ground feed with water, and at all times and under all circumstances give plenty of pure fresh water to drink. In addition, give at least three times per week salt and wood ashes or charcoal. Boars used in stud should have same kind of food as above recommended for sows, and should never be fed immediately after service. If I should make any change I would feed the boar more oats and wheat, as such feed keeps him in better condition and more vigorous. Give him plenty of room for exercise, and furnish him a good, warm, clean, dry bed. All breeding stock should be kept in good condition, not fat nor poor, but kept in moderate flesh. Young sows, however, should be kept in better flesh than old ones, and by young sows I mean those under one year old. If some of my hearers should desire to know why I prefer these conditions, I will say old sows, if allowed to become fat, are too lazy and stupid to properly care for their young, besides they are so heavy that if they should step on a young pig, or lie on it, they crush it at once, and if too poor they have not sufficient vitality and good blood to properly nourish their young. Young sows should be kept in better flesh, because they have to build up their own bodies as well as their young. They stand the strain of suckling much better, and are not apt to overlay their pigs even if quite fat.

Now I have concluded that this subject requires me to speak of coupling and farrowing and attention to sows and pigs. I shall therefore speak briefly on these subjects—not, however, entering upon the great field of selection of breeders, and points to be considered of form and pedigree in making crosses, as that is a text in and of itself. I shall, therefore, confine myself to treatment and handling of the animals at the time I have mentioned.

The sows should be allowed only one service, if it is a good one; if not, repeat next day. After service, keep her in a pen by herself for at least three days, when she may be turned out with her companions. Boars one year old and over may serve twice per day, but boars one year old one service per day is all that should be allowed. Every breeder should have a breeding-box, so constructed that the sow can be confined and arranged to keep a large part of the weight of heavy boars off of the sow. The task of describing this breeding-box, so as to make it plain on paper, is too much for me; but if you will go with me to my place I will take great pleasure in showing you how to construct and use it. From eighteen to twenty-five days after service the sow should be watched to see if she comes in heat again; and about the fortieth or forty-fifth days also have attention, as they sometimes miss one heat and may still not be with pig.

As the time for farrowing approaches and the belly begins to drop, the sow must be daily observed to see that she receives no injury, and is in good health; and if there be snow on the ground, and the mercury drops to ten degrees below zero, keep the sow up, as the teats are likely to be frozen by contact with snow and cold. Within a week or ten days before farrowing, see that the sow's bowels are loose and easy, handle and scratch her, and get her used to your hands and voice; and before she farrows take your knife and trim the sharp edges off her hoofs. This trimming of the feet is an important item, as it makes the feet round and prevents cutting the toes and legs of the pigs if the sow happens to step on a youngster; and another important reason is that the trimming also prevents the sow from cutting her teats in her struggles to rise when her belly is large and her teats full and prominent.

The prominent symptoms of farrowing are several: First, the sunken condition or depression on each side of the tail, a large full udder and teats standing out full and the appearance of milk in teats; and, lastly, the discharge of the watery fluid from the genital organ; when this last symptom appaars you must not go to bed if you want to see the event for it is close at hand. If the weather is cold it is very important that you attend the sow; in such case I use warm blankets and spread on over the sow; as the pigs arrive wipe them dry and place them under the blanket which covers the sow. If it is very cold warm blankets by the fire, but use as little artificial heat as possible; it is very seldom that the animal heat is not sufficient in sheds such as I have described to answer all purposes with the aid of the blanket. After the pigs get comfortable take small nippers and pull out the front tusks of each little fellow. This does not hurt the pig and prevents them from biting the sow as they fight over a teat. These little tusks are as sharp as needles and many times they bite so fiercely as to get the sow in a frenzy of rage, causing her to jump up and refuse to let the pigs suck. I have several times had sows so angered, and by pulling the teeth of the little fellows, have had the satisfaction of seeing all quiet and peaceful in an hour's time.

If you are doubtful on this point, all I have to say is to try it. "Seeing is believing." I pull the teeth of all young ones on my place and have no trouble with restless sows. Do not feed the sow corn for at least three days after farrowing. I usually give some warm gruel, say half a pint of meal in a half a gallon of boiling water. Let it stand until it gets cool and feed while yet about milk warm.

Gradually increase this quantity of meal in a half gallon of boiling water and after the third day begin with small feed of corn and shorts. If the pigs have the scours, give the sow warmed sweet milk skimmed, and no slops, and add a teaspoonful of copperas dissolved in warm water given in milk, if the milk alone does not stop the disease.

To prevent indigestion and too much flesh the pigs must have exercise, and if the weather is too bad for out-door exercise, turn the sow out and switch the little fellows around the pen lively for a little while every day; this stirs up circulation and prevents indigestion, thumps and scours. If they do not get exercise they become costive, then their stomachs become sour, and thumps, scours and death follows quickly.

To prevent lice, keep your breeding animals free of them and use the following: Take a pint of lard and heat it until it becomes a liquid and a pint of coal oil, and a tablespoonful of crystal carbolic acid; apply on neck, behind fore arm and back part of hind legs with brush, sponge or woolen cloth.

Now, gentlemen, I have given you my practical experience, and have by no means exhausted the subject nor given all, but have contented myself with the mention of such things as I could think of. If I have in any way added to your stock of information, or to the interest in this annual meeting, I shall feel richly repaid for all the trouble this article has caused me.

DISCUSSION.

W. C. Williams. I am pleased with the article; it is the honest conviction of a practical breeder. There are one or two points in the address of which I wish to speak. He speaks of placing a board eight inches high to protect the pigs from getting out of the bed. It is perhaps high enough for a young sow, but not for an old one. She will pile the bed nearly full and there is danger of the pigs getting over the board. I would prefer a board twelve inches high for an old sow. It will do sometimes to put blankets on sows in cold weather, when they farrow, but I have had sows so restless, even when the weather was not cold, that I have had to keep a basket at hand and as soon as the pigs came remove them. There are many pigs lost by not having some such means to save them.

Mr. Mugg. The essay was a good one, containing much valuable information. There are many things of importance in swine husbandry which we neglect to our injury. If we would follow the advice given in the address, regarding brood sows, they would not be restless. I have had sows, as friend Williams says, that were not in a good condition to farrow pigs, and I have given salt water sometimes and they would remain quiet. I am not favorable to taking them away in a basket. It is a grand thing to pull the teeth.

I N. Barker, Boone County. I like the address well. I know it is practical experience he has given us. However, he forgot to tell us the proper time to couple. His remarks on bedding are good, but he has left out the finest bedding we have, which is blue grass. It is the nicest and cleanest bedding I know of, and it lasts the longest.

T. M. Reveal, Marion County. I am very much interested in the paper. I fully agree with Mr. Mustard in having small houses or apartments instead of one large hog house. They, perhaps, are not so handy, but if disease gets in the herd they are more easily cleaned and renovated. Those fenders he places too low. I would rather have them fifteen inches high than twelve inches. Sometimes we are compelled to have a large amount of bedding and the sow lies up high, and I have come to the conclusion that likely they do more harm than good. I have never tried blue grass for bedding, but prefer forest leaves; it is the nicest material for beds of anything we can get. Our Northern Illinois and Wisconsin friends claim to keep their hogs so clean they never have lice. I do not know why it is so. I use crude carbolic acid, called commercial acid by the druggists. It can be had for sixty cents per gallon. It is not injurious to the skin and makes the hair look better. I apply it with a corn cob. It acts as a disinfectant, and is cheaper than anything I have ever tried.

W. C. Williams, Henry County. I would use crystal carbolic acid. We do not know the strength of the crude acid.

Dr. Simmons, Cass County. I would not go to the expense of buying the crystal, as the crude is as good and has the same effects. The strength of it depends on the honesty of the druggist.

Mr. Davis. My experience in scours is, if you feed no sour slop your pigs will not have it.

I. N. Barker. I want to sanction the use of carbolic acid. If there is any tendency to a mange it will cure it. It is also excellent to remove vermin. I hope it will not go out that it is the sense of the meeting that breeders should advocate pulling the teeth of pigs.

James Mustard, Marion County. I am so wrapped up in teeth pulling that I will have to stand by it. If the pigs bite the sow she will frequently kill them by lying on them. I always pull out the little tusks of every litter. If these tusks are extracted it won't be long until she will let them suck without a protest.

Mr. Mugg. Where you have large litters, the small ones are crowded off. If you will pull the teeth of the larger ones the smaller ones will soon take their rations.

Dr. Simmons. I am a young breeder and this is a new idea to me. I think the merits of the question depending upon the extraction is on the after development. Will those teeth be reproduced so the pig can subsist on the kind of food nature designs? If so, it can not hurt the pig. The rule would apply to a pig the same as a child.

Mr. Mustard. It is the tusk only that I pull.

Dr. Simmons. If it is only the tusk removed it will, in many instances, improve the beauty and usefulness of the hog, and not hinder its development. I have had the teats of my sows almost torn off, but did not know what caused it. I now believe it was the pigs biting her, and I am going to try your plan of pulling teeth.

T. M. Reveal. I am inclined to think there would be no disadvantage in removing the tusks. Sometimes the tongue is too wide and is cut by them. I can not see that it will interfere with the feeding, and may do some good.

I. N. Barker. How long does it require for the teeth to grow out again?

James Mustard. They will grow out in a year, and be of the same size as the others.

Thomas Nelson, Park County. I have been interested in this matter of pulling teeth. If the teeth of the larger ones are taken out the smaller ones will soon overtake them in growth; they appear to even up by that means.

James Mustard. The little fellow is weaker, but with the sharp teeth he will inch his in by snapping here and there until he gains his end.

The Secretary submitted the following report for the year ending January 27, 1886:

Received on fees	$6 00	
Received of W. A. Macy	15 00	
Total receipts		$21 00

The Treasurer submitted his report for the year ending January 27, 1886:

On hand as per last report	$38 20	
Received from Secretary	21 00	
Total		$59 20
Paid on orders		14 50
Balance on hand		$44 70

The Executive Committee reported as follows:

Your committee appointed to audit the accounts of the Secretary and Treasurer have attended to that duty, and find them correct.

Respectfully submitted,

W. C. WILLIAMS,
M. EDWARDS,
H. MCCORD,
Committee.

T. M. Reveal, not having prepared a paper, as requested, on "A Breeder's Observations at Fairs," spoke as follows:

I feel I am not capable of interesting you, yet I do not like to shrink from duty, and will give you a little talk. Our fairs have been going on ever since I can recollect, and I believe we have made some improvement in judging at fairs. I must say that I hear some complaint among exhibitors of swine. I am willing to say I am a Poland China hog crank. Somebody said it was cranks that moved the world, from the grindstone to the Corliss engine.

Some exhibitors at the fair are dissatisfied, and this dissatisfaction is nearly always thrown on the committee. It occurs to me that probably that blame should not be put on the committee. The boards of agriculture designate some one to take charge of the department, and sometimes they don't get the man that would be best. This man may not be competent to select enthusiastic hog men to act as judges. There is not much time to select. He puts it off until the last hour, and he does not find the man he wants. He calls on John or Harry because he is a farmer, and insists on his going on the committee. I wish to say I have known as many as seven men on a committee in order to satisfy some exhibitor. Now I want to be recorded as opposed to sitting on a committee of five, three, or even two and one to act as umpire. I think we could do better with one man and use some system. We have been wonderfully slack in the system of judging swine. It would be an improvement if we had a standard by which we could judge each class of swine. We should have as good a system as the poultry men have. They have for each class a man who is thoroughly qualified, who goes through, judging them and giving satisfaction. The Poland China have three or four standards, differing somewhat, but none of them say what shall qualify a hog. The result is, every man who has improved hogs takes a great number to the fair and compares with his neighbors who have grades. I know our State Board have to build many pens.

The chicken men study their standard. They look among their broods to see which are disqualified, and take only those to the fair that will score pretty well up.

We should have but one judge. It is said it is too great a task for one man to judge the swine. I do not think it is too great a task, if he understands it, to go and score these hogs, and hang up a score card on each pen marking clearly where a deficiency occurs. It would be of interest and benefit if by looking at this card we could tell where the deficiency was, and much might be learned in that way. Suppose a man wants to buy a hog. If there is a score card hanging there he can tell those points, and he at once seeks an examination of them. This scoring would certainly be of great help to young men. Sometimes contests are quite close, and all the exhibits are quite deserving. Perhaps it is not necessary to offer more money, but I think we should have four premiums offered, and the fourth a reward of merit.

Sometimes contests are very close. Sometimes old breeders get first and second prizes, and a young animal would scale in half a point of first and yet get no prize.

With some there is the idea of a sweepstakes committee. When we get down to a system and a standard I do not see the necessity of a second committee. There are the marks already, and the decision should be final. The question comes up, where can we get experts. You all know who ought to be experts. They are those who know what is a good hog. If there is a scale of points adopted for judging, men who know what a hog is will soon become experts by using it.

A perfect hog never has been shown, and never will be. Some hogs are better in certain points than others. In judging a hog, if we take into consideration the poll, we want them short, wide and full. If it don't come up to this it is not a perfect hog. We can not get many up to 90, or even 85 points. The noted hogs, "Star of the West" and "Tom Corwin," were as near perfect as we ever get, yet they were deficient in some points. When our young men come to examine these score cards which have been used in judging, they will be a study for them. In my remarks I have left so many ways open there is room for criticism, and I hope you will give your opinion in full.

DISCUSSION.

Milton Edwards, Henry County. Under almost all systems of awarding premiums some are not satisfied, simply from an honest difference of opinion. We will have to come down to a common standard; people have different notions about what makes a good hog. Men sometimes think they have not had justice done them, yet the committee have done what they thought was best. I believe a more uniform satisfaction might be obtained from an expert system. Any man who offers his services as an expert on any kind of class should be familiar and know what is the highest point adapted to that particular class, and no man who values his judgment would dare use favoritism as an expert. When we come to the time of experts, you will get nearer to an honest decision than any other time. While you have committees of two, three or more men, you find men of different opinions and can not render a satisfactory decision. If we come down to the expert system, we must have a standard of excellence. In all my observation I never saw a hog score 100 points. I have heard of them, but never saw one over 90 points. The nearness we have approached to it only proves it is possible to reach it. When we have our score cards up, there is no opportunity for favoritism to be shown. For sweepstakes we might have a new committee. I do not see any impropriety in that.

Dr. Simmons. I want to know the opinion of the Association, whether it is possible to adopt a system of experts peculiar to all breeds?

Mr. Edwards. You have to adopt a standard of points in consideration of the kind of animal to be judged. You can not adopt one that will be applicable to all breeds. In regard to the expert system, you can not get a correct system of experts unless you have one system of experts throughout the county. While Ohio, Indiana and other States have each a system, we can not tell anything about it.

Dr. Simmons. The qualifying terms would have to be different; that modification would apply to all breeds. In all symmetrical animals the measurements of different animals and the measurement of the different parts should correspond. There should be a system of measurement in this plan of scaling by which this symmetry of the hog can be ascertained. A symmetrical animal should measure around the heart and flank and on the back from the crest of the forehead to the root of the tail the same. If any of these measurements are deficient, they should be so marked on the score-card. It is the only way in which we can arrive at anything definite in this matter. We should learn to apply the tape line to our animals and not trust to guessing by sight.

G. W. Thomas, Rush County. Is a man competent to judge without using this line? If I take the tape line and apply it, people would say, "he is not a good judge." When a person is half-educated he thinks he knows it all, and he don't want one that is educated to take hold. This is one drawback, yet I am in favor of the one-man system.

W. C. Williams. I have been interested in the remarks of Mr. Reveal; I have thought much on this subject and I am satisfied there can be no standard by which we can judge our swine until we have the size laid down, that a hog of certain age shall be of certain size; if it come under that we will cut on the scale of the hog. We claim that the Poland China is a large breed. If we wanted to bring them down to a lower breed, we might throw all together and scale for the greatest. We breed to satisfy our demand. It is no trouble to get a small hog that will scale well. A sow eighteen or twenty months old, that has not raised a litter of pigs, should weigh from four hundred and fifty to four hundred and seventy-five pounds.

Our yearling boars would be different sizes, but should not come under four hundred and fifty pounds at eighteen months old. If under that scale they should be so marked. A small hog will scale higher than a large one. As a rule, packers like small hogs better than large ones, but our demand, in the West, is for large hogs, and you can't get a large hog that will scale as well as a small one until two years old.

T. M. Reveal. I do not think there is a breeder who ever saw an extra-sized animal or ear of corn that was the best. I do not want the big ear of corn to plant from. It is the symmetrical animal and firm ear of corn that produces best. A large animal is not a good breeder. I think you will find that the show animals have been produced from compact, symmetrical and well-proportioned animals in all respects. The West is behind a few years in color, now they want black. If the rage for spotted hogs were to start in the East, it would be four or five years before it would get to the West.

Mr. Edwards. I believe the final outcome of the hog is for the block, and the better growth and size for age is the hog in demand. I had some little experience a few years ago; a yearling hog weighed six hundred pounds, a very growthy pig, would fatten at any age and was as good a breeder as ever sprung from the race. We want a hog that will take flesh at any time.

W. C. Williams. Lord Corwin was a very growthy hog, yet his pigs have taken more prizes in the fairs of Indiana, Chicago, St. Louis and Iowa than any other hog living.

Mr. Edwards. A perfect standard would have some reference to growth.

D. L. Thomas, Rush County. At the National Poland China Association, at Chicago, Mr. Jones, of Michigan, Clever, of Ohio, and myself, were appointed to form a national standard. In the discussions of that convention it was thought the time was not far distant when there would be a striking resemblance of typical hogs of all breeds, yet there would be something that would keep them apart.

Mr. Goodwin, of the Breeders' Gazette. The Grand Rapids Association of Michigan agreed to adopt this standard of excellence, if the committee came to an agreement.

W. C. Williams read the following paper on the "Value of Root Crops and Vegetables in Swine Feeding:"

Gentlemen—You have assigned me a subject which should have been given to one more competent, as it is one that interests every swine breeder in the land. And I hope in the discussion which may follow, will bring out many points of interest which I will fail to produce.

We will consider the root crop first. I think the sweet potato is one of the best articles of food that we can give our hogs, and although the price is too high to feed for profit it will pay any one to gather up all the small tubers and feed to his hogs. I would think them worth about half as much as corn in winter as they will keep swine in fine condition. Irish potatoes are worth very little when fed raw only as a regulator, but when cooked, they seem to be worth much more.

The sugar beet is a valuable food not only to form flesh but is also a great milk producing food. My partner (Mr. Fentres), fed his brood sows, two years ago, on beets and I never saw hogs do better or keep in finer condition. But when they began to farrow, the flow of milk was so great that his pigs began to die from excessive fatness and when he slacked the feed of beets they gradually improved. Thus showing the great milk and fat producing properties of the beet. Beets can be raised profitably as a food for hogs.

I have never fed the artichoke but would judge from the taste that it is richer in fat producing properties than the Irish potato. It is spoken of very highly by those who have used it on account of its value as food for swine in winter and the cheapness of production, as it is claimed that hogs may root in an artichoke patch all winter when the ground is soft, and no difference how close they are gathered, there will be plenty left to seed the ground for the next year's crop.

I would not consider turnips profitable as food for swine in a country where the more valuable root crops can be raised as cheaply as they can here in Indiana. They contain too much water and are not relished by swine, and have no good qualities not found in some of the other roots. I consider the sugar beet worth all the other root crops together.

We will now take up the vegetable and will only speak of the pumpkin under this head. I consider the pumpkin worth more than all the root crop combined, and it is only second in value on the farm to oats and corn as a hog food. It is claimed by some that the seeds will cause too much activity of the kidneys. But the kidneys will throw off more impurities than any other organ of the body. And while they may be very active while feeding pumpkins it does not seem to inflame them any. I had two sows in my barn lot last fall where I fed my cows pumpkins. We bursted them and shook out the seeds (as we had been told the seeds would dry up the milk in cows). These sows would go around and gather up the seeds as greedily as if it they had been corn and they improved every day. Their hair was slick and their skin was soft and oily looking. We put one of our aged sows (which we had fed for show) in a dry lot to reduce her to breeding condition. We fed her on pumpkins alone and in a month she was in better flesh than when we commenced trying to reduce her.

We sold an aged sow last fall who had lost some of her back teeth; but on account of her show and breeding record, a gentleman was induced to buy her, and in thirty days he wrote us saying, I have fed the sow on pumpkins alone and she has gained 100 pounds.

I look back to my boyhood days, when swine plague was unknown. I see the farmer (especially in this wooded country of ours) take basket in hand, containing about one ear of corn for each pig, go back of the barn and call (from the open woods) his hogs, who are aroused from their bed of leaves and come on the run to get their small allowance of grain which induced them to come up twice a day. What else they got was obtained by hunting through fields and woods. The latter were thickly matted over with vines and weeds, many of which had bulbous roots which the hogs had access to all the year when the ground is not frozen.

Gentlemen, in this day of swine disease when our hogs are kept in close quarters, and year after year in the same place with rings in their noses so that they can not hunt for a root or worm, we will have to supply a demand of nature which they are no longer able to supply themselves, and I know nothing that will come nearer supplying this demand than the roots and vegetables mentioned, which are so easily raised.

DISCUSSION.

Judge Buckles, Delaware County. My experience in breeding thoroughbred hogs is limited. I am much pleased with the facts contained in the essay, and we should give the subject of feeding hogs roots and vegetables more attention than we have been in the habit of doing. I am going to try in the future to breed a better hog. I remember in my boyhood days that people raised many pumpkins and fed them liberally to the hogs. During these times, as I remember, we had no cholera. Whether it was prevented by the use of pumpkins, or by drawing food from nature's storehouse, which I have no doubt has something to do with the health of the hog, I do not know. It is clear in my mind that we are too much in the habit of feeding grain, and do not pay sufficient attention to giving vegetables enough to keep the system healthy. Last year I was in attendance at the meeting of the Association, and heard the gentlemen discuss the question of feeding pumpkins to swine, which brought to mind early experiences, and this year I have fed an abundance of pumpkins, and never had hogs to do better. I have not been in the habit of feeding potatoes, turnips or beets. It occurs to me that this subject is a matter of great importance to the people of Indiana. Pork is one of the principal articles of commerce. Deprive the farmer of Indiana of pork and you deprive him of a very large portion of revenue. If we can give the hog better treatment it will add to the wealth of the farmers and State, and we look to this Association for a discovery in that direction. If the feeding of pumpkins tends in a considerable degree to accomplish that object, we should raise more of them and take more pains in feeding. Instead of planting promiscuously among the corn, I would recommend planting every seventh row.

James Mustard. I planted this year on clover sod every sixth row, and had good success. I had plenty of pumpkins for feeding purposes up to the middle of December. I usually put them under clover straw covering about one foot deep, which I consider ample protection for an ordinary winter. I think we can feed brood sows so much pumpkin that it will be difficult to get them in pig; but for common hogs I let them have all they want.

T. M. Reveal. I have been in the habit of planting pumpkins for my hogs both promiscuously through the corn and every seventh row. I have also planted in patches alone with even better results than among the corn. I have also planted among my potatoes, planting every tenth row, and got a good yield, while the potatoes were not injured by so doing. In regard to feeding too much pumpkin to brood sows, I think Mr. Mustard is correct. I had some brood sows which I fed exclusively on pumpkins and had trouble about them standing. I also had some of the same kind of sows which were not fed so strongly and had no trouble in that respect, which convinces me that there is something in the feeding.

I. N. Barker. The subject of change of food cannot be too much discussed. Mr. Williams alluded to sugar beets. I would also add turnips. They are easily raised with other crops. They may be sown where wheat or early potatoes have been grown, which we cannot do with sugar beets. By feeding roots in connection with corn, hogs fatten faster and make cheaper and better pork. By taking proper care of our hogs 80 per cent. of the swine plague would disappear.

Judge Buckles. Mr. Reveal, how does your seventh row planted in pumpkins result in point of profit as compared with corn?

Mr. Reveal. I cannot answer intelligently. I think, perhaps, it would be better to plant an acre to itself.

W. C. Williams. That is my mind exactly. We cannot go in the field well in the fall to gather the pumpkins if planted among the corn.

Mr. Edwards. I coincide with Mr. Williams; it is better to devote the ground exclusively to pumpkins than to plant them among the corn. The vines grow rapidly, and among the corn they do not yield so abundantly.

Dr. Simmons. If they are planted among the corn they are scattered and shaded, and the bee and different insects are not so likely to impregnate the bloom and cause them to produce fruit; while in a small compass the honeybee and bumblebee would fertilize the different flowers and cause them to bear.

G. W. Thomas. Sometimes the bloom falls off when they are scattered promiscuously over the field. Where pumpkins are planted together the bloom is covered, and this, perhaps, is one reason why they produce more pumpkins than otherwise.

Dr. Simmons. The gentleman favors a late planting of pumpkins. This is not my experience; usually late ones fail to mature.

H. McCord, Hancock County. I had some experience in the pumpkin crop last season; planted among corn in new ground, and a better crop I never had. I never had such trouble with my sows to stand by feeding pumpkins as I had last fall. I like to feed pumpkins to my general herd, but I do not deem it advisable to feed brood sows, as it seems to create an excessive fat. I see no bad results in feeding them to the males. I have had some experience in bedding with oats straw. I find that it is not at all desirable; in a short time it produces a dampness and creates a fever.

D. L. Thomas. Did your sows run on mast?

H. McCord. A part of them did and a part did not; I could not see any difference.

Mr. ———. I have been planting pumpkins for twenty years. I mix the seed with the corn in the drill, raising a fine lot of pumpkins and as much corn as if the pumpkins were not in the field. In the fall I gather out one row of corn and then carry in from each side until I get the pumpkins out. I feed them to my brood sows every year and experienced no trouble. I bred fifteen sows to one young boar, and only one missed. Mr. Mustard, do you floor your pens?

James Mustard. Yes, sir; I use plank.

Mr. McCord. The pumpkin comes before the bloom. Some may doubt this, nevertheless it is true.

Dr. Simmons. All medicine acting on the kidneys will cause abortion, hence it is necessary to be careful about feeding too much pumpkin to breeding sows. Pumpkin seed or watermelon seed act on the kidneys.

Mr. Wilburn. In reference to feeding pumpkins you have struck a good idea. Hogs are ravenous for them, and they are a splendid appetizer. Farmers are undoubtedly striking on the right thing in feeding roots.

EVENING SESSION.

The Convention met, with President Thomas in the chair.

DISCUSSION.

J. G. Byers, Kentucky. I am not interested in the breeding of hogs, raising only enough for my own use, but I am here to attend the Shorthorn Breeders' and Wool Growers' meetings. I am much pleased with what little I have seen of your meeting. I was particularly interested in the pumpkin question. We had concluded in Kentucky that pumpkins were not of much value, but I am now going to raise some myself.

I. H Furnas, Hendricks County. I was much surprised during the discussion this evening that apples were not mentioned as a food for swine. I regard an orchard of sweet apples as one of the best things we can give our hogs; besides, they are cheap. A field of clover is also good for them. Mr. Mustard's plan of building a hog house is above the common farmer but will do for fancy breeders. I am living in a section of country where they raise blue grass, corn and cattle. We want something to come in the scope of our experience. All that has been said is in the line of fancy hog breeding.

Mr. Mustard. The house I spoke of in my article costs $125 and will last ten years. Any farmer can well afford to build such a house, as it will cost him less in feed and bedding in one winter than it would cost. It is built plain and substantial. What is good for us breeders is good for the common farmer. As to apples, I admit they are good for hogs, but the apples in our country cost two dollars per bushel. I have two orchards and not a peck of apples this year. If you put up clover hay without rain on it and salt it, the hogs will eat it all winter if they can not get anything else. It will pay the farmers to build houses as I have suggested, which will do for sows to farrow in as well as for the rest of the herd to occupy.

W. C. Williams. Mr. Mustard describes his house as double wall and filled in. This is too warm for them to run in but will do to farrow. Coming out of such a warm house the cold air will injure them.

Mr. Mustard. My house is open on the south side and the sun shines in two-thirds of the day.

W. C. Williams. Mr. Mustard's article is on "Winter Management of Swine." He should treat on disease, and that generally commences in the fall. I want to hear what is the best preventive and treatment of disease among hogs through August and September.

Mr. Mustard. Can a man carry the cholera, on his clothes, from one herd to another, or is it possible that a dog may transmit by coming in contact with them?

W. E. Jackson, Henry County. In our section of country we had some hogs supposed to have the cholera. After death they were dissected and we found them to contain worms from three to fourteen inches long. In one or two cases the worms were fourteen inches long, with the head imbedded in the intestine, which had turned black, and coils formed entirely around the intestine, at which place the intestine rotted off. As many as forty worms were found in a pig three months old. The intestine had thickened to the thickness of one-sixteenth of an inch, and where the head of the worm had fastened the intestine had turned black. We dissected five or six and all seemed to be affected in the same way. I would like to know what is a remedy, outside of a preventive. It has been thought that they came from lice on the hogs.

Dr. Simmons. I would inquire what the symptoms in the case were during the time of sickness?

W. E. Jackson. They were affected with both vomiting and purging. Some were constipated whilst others had a diarrhea. They would stop eating, seemed sluggish of movement, and finally dwindle down and die. I suppose it is owing to the condition of the constitution when the worms begin to work whether it will cause diarrhea or constipation. A gentleman claiming to be a hog doctor, from Jonesborough, lectured at our place, sometime ago, on the hog. He told us how we would find them, and gave it as his opinion that in the majority of cases it was best to kill the hog at once; it was contagious, and the only remedy was prevention.

James Mustard. If that man had given carbolic acid every other day his hogs would not have had those worms. I would use the crystal acid, diluted in water. It is just the thing for worms.

W. E. Jackson. Coal oil and lard, mixed half and half, will destroy lice but not nits.

J. Strange. I would like to ask a few questions regarding this so-called hog cholera. I have had hogs affected with this disease while others in almost adjoining fields exhibited no signs whatever. I have been in the habit of feeding pumpkins to some extent. Those to which I fed pumpkins seemed to be exempt, while others right across the road, not having pumpkins, died. It seems as though pumpkins are a preventive. I want to know what started these worms, if they are the cause? Some of my hogs were constipated, while others were the reverse, and some appeared to have lung trouble. I consider one of mine died with pneumonia or lung fever, while some seemed to have typhoid fever, and would go off in spasms. I have tried to pry their mouths open with a chip, but could not, their teeth were so firmly set.

Dr. Simmons. Touch a man or hog after having the cholera will cause a spasm after death. I do not mean to say, gentlemen, all we pronounce cholera is cholera. There is a peculiar disease called endzen; this carries with it worms, and some of the symptoms are diarrhea and constipation and sometimes boils. Hog cholera is epidemic, just like it is in the human family. Men, women and children are taken sick here and there in different places, some are epidemic and others infectious. The cholera of the hog is both.

J. Strange. After discovering that my hogs were diseased, I cleaned the bedding, which was an old straw pile, by spreading it around and putting new lime over it. I believe it is highly essential that the bedding should be kept clean and no accumulation of excrements and filth should be tolerated.

Dr. Simmons. The disease originates spontaneously.

Mr. Strange. There were three lots of hogs above mine on the line of a ditch.

from which they drank, and mine died, I think, from the effect of drinking the water that those above had access to. I would burn mine as fast as they died. The vomit of some was peculiar and very obnoxious; it seemed to fill the air full of an effluvia. I would use lime where they vomited as a disinfectant. One of the sows got well apparently, but in two weeks took sick again and died.

James Mustard. How long after separating the hogs did they get sick?

Mr. Strange. Three or four days.

Mr. Mustard. The question has not been answered, "Can a man carry the cholera from his herd to his neighbor's on his clothing, or can a dog transmit the disease by running where the hogs are?"

Dr. Simmons. I believe it can be carried on the feet of attendants and wheels of wagons or anything of the kind. That is the reason I advocate taking some measures to prevent the traffic in dead hogs. Gentlemen, if we were to permit human bodies to lay around on our farms and allow them to be hauled in the streets and highways it would not be a year until some form of epidemic would sweep over this country. Is it any wonder that the hog cholera is here, where the dead animals are carried along through the dust of our streets? These substances have living germs that will contract the disease to hogs coming in contact with it.

G. W. Thomas. I had similar views to that of Dr. Simmons, but I have changed my mind. I have known many persons to procure a hog that had died with the cholera and feed to those that were diseased, and say it was a sure cure. I have known hogs to eat the grease that dripped out of the wagons used in hauling them away without any bad results. Fever breeds germs. The gentleman's hogs took cold, which settled in the weakest parts and produced disease.

Dr. Simmons. Gentlemen, disease produced the cause. This disease we are calling cholera is not cholera in every instance, but is it not called cholera? Hogs die of different diseases. In some instances they die from worms. In such an instance there would be no specific germs to convey disease. Four years ago I had a herd of hogs feeding in the wheat stubble, cutting up corn and throwing over the fence. One Sunday morning I discovered a stench about the premises, began to look after it, and found a dead hog close to the circle where I fed my hogs. It weighed perhaps 100 pounds, and was in a bad state of decomposition. I never knew how it came there—it was not mine—and I believe some evil designing person put it there to inoculate my herd. In a short time I would have lost all of them. Those that had not contracted the disease I sold. I am satisfied that disease was produced by infection from that hog. A designing man who works in those factories can communicate this disease.

J. W. Apple. My hogs have eaten others that died of cholera, and no bad effects resulted.

W. C. Williams. In 1873 I am satisfied the cholera was brought to my farm by a small pig. A neighbor of mine lived near who had some pigs that followed after wagons hauling dead hogs, licking up the drippings, and took the cholera. One of my show sows ate the dropping from that pig, and in ten days took the cholera. I took all the hogs fit for show back to the woods, forty rods distant, and in about a week some of them were sick. I lost, that year, 79 head in two weeks. Some of them would bleed at the mouth and nose.

Mr. Mugg. We all have our views about the hog cholera, and not many look at it alike. Nine years ago the plague swept through my herd. My father, living near, was losing his. It was his custom to burn them, and I was assisting him in hauling them for that purpose. I had a fine sow which had pigs. As it was a cold day I hung a carpet around the house to keep the pigs from freezing. Before I left I went in the house and sat down by the sow, and in fifteen days she died with the cholera, and then the pigs. I see no other way for her to have contracted the disease but from my clothing. During their sickness the hair shed, and they broke out in sores. I am satisfied the disease is contagious. After losing as many as I have, to say it is not contagious is hard for me to believe. A dog will carry it as well as a person. The remedies advertised and sold over the country are not as valuable as recommended.

Mr. Edwards. A few years ago I had 150 head. A neighbor of mine turned his hogs in the highway and they became affected. A south wind prevailed, and in a few days my hogs took the disease. I have had it in almost all forms, until I lost 117 head. I usually burn the carcasses. I think I can detect a hog with the cholera from the peculiar scent about them. I never sell to these factories, but burn them. I do not see why such institutions should be allowed to run in violation of the law.

James Mustard. I am not certain that a dead hog is dangerous. Brother Apple tells us his hogs ate them without taking the disease. If those hogs had got over among yours, your hogs would have had it sure. You may carry it on your person from one herd to another without doubt. Four years ago it was brought to my farm from Mr. Armstrong's by four men coming to look at my hogs; in fourteen days they took the disease. If it is three years after hogs have laid around a straw stack the germs left there will give it to other hogs coming in contact with it unless you disinfect.

Mr. Edwards. I am of the opinion that fevers may be contracted by the hog cholera.

T. M. Reveal. Have any of you known a sow to die with cholera that was in pig? I never knew of one to die that was in pig for some length of time.

D. L. Thomas. I have given much thought to swine disease, and I am satisfied there is something mysterious about it, yet, I agree with Mr. Mustard that there is more danger from a live than a dead hog. Dr. Simmons thinks my reasons were not conclusive. Unless he can show excrement in the water how could it contaminate my hogs with the disease. They don't foul their bed and they don't drop excrement in the water. The Dr. speaks of worms. At the Chicago convention last fall a farmer by the name of Wilson from Nebraska was there; he had traveled over the State dissecting hogs by the thousand and passed his views on what he had seen of the cholera. He had found worms sixteen inches long, and had a large case of the worms on exhibition in every stage up to sixteen inches. Every hog examined in that state died from these worms. When a man states that the disease is not contracted from dead ones, I can not contradict it until we prove the falsity of it. I placed a pig in a rendering tank where ten thousand hogs had been rendered, and let it remain about an hour, after which, I took the pig home, and it was not the least affected, yet in the face of these facts there is something mysterious about it.

Dr. Simmons. In regard to the gentleman from Nebraska, it is evident that he had an ax to grind. I don't believe there is a specific for the cure of hog cholera and we should have something done to prevent this terrible loss. I have sometimes dissected hogs; in some I found worms while in others there were none; but whether these worms are the cause of the disease or not, I doubt seriously. I have found some that died of cholera which had conjestion of the lungs and in a state of decomposition before the hog was cold. When a hog bleeds at the nose it has conjestion of the brain or tissues of the head and seldom if ever recovers.

Mr. Wilburn. It is an epidemic, in my opinion; it strikes one neighborhood and then another sometimes in the worst stages ever known. It is not communicated from dead hogs, but may be carried on your clothing from one herd to another.

G. W. Thomas. You can not convince me that it is contagious.

Mr. Mugg. A friend of mine had a hog that died of the cholera. He took that hog and put it back in a lot to burn it. Before he accomplished this some brood sows ate a portion of it. In a few days they all took the cholera and died.

W. C. Williams. I think there is danger where hogs have access to dead ones.

Dr. Simmons. I have been troubled in raising young pigs on account of flies. I construct one corner of the breeding pen so the pigs can get and out at will, giving them a clean bed and hang a piece of carpet along one side, which drops down over the opening and prevents flies from disturbing them.

W. C. Williams. I have had some trouble when sows farrowed in the summer with green flies laying eggs over the pigs. By throwing elder leaves in the bed they will not trouble them.

G. W. Thomas and W. C. Williams were appointed to wait on Governor Gray and invite him to address the convention.

THURSDAY—MORNING SESSION.

Convention met, President Thomas in the chair.

The Committee on Programme for the next meeting made the following report:

1. "President's Address."
2. "The Best Age and Season to Feed for the General Market," J. H. Beabout, Rushville.
3. "The Age to Breed Sows," Lloyd Mugg, Center.
4. "Swine Disease," Dr. L. A. Simmons, Crittenden.
5. "Boxing and Shipping," Geo. W. Thomas, Homer.
6. "Best and Cheapest Mode of Constructing Pens and Lots," John Manlove, Bentonville.
7. "Management and Exhibitions," I. N. Baker, Thorntown.
8. "Coupling with a View to Producing Show Animals," M. Edwards, Knightstown.

Mr. Mints, of Mt. Comfort, read the following paper on "What are the Best Qualifications of a Successful Swine Breeder:"

Mr. President and Gentlemen of the Swine Breeder's Convention:

The enormous proportions to which the business of swine rearing has grown, and its great importance to the business interests of our people, have, within a few years, revolutionized the methods of conducting it; have called into existence the professional swine breeder, and this is the individual whose qualifications we propose to discuss.

Every vocation of life requires a certain natural tendency of mind to make that calling successful, and the business of swine breeding is not an exception to the rule. The breeder, to be successful, must have in the first place an intuitive fondness for, and take great pleasure in, the rearing and management of stock, and especially of swine. This natural tendency is the great center around which all other elements of success cluster. This tendency provides an abundance of food and drink, furnishes suitable quarters, cares for the sanitary welfare, prevents brutal treatment, and is vigilant in caring for their every want. In addition, he should be broad minded, of excellent judgment, a fine discerner of slight differences, capable of drawing fine distinctions, full of energy, and liberal in views—capable of recognizing merit wherever found, even though it be in a different breed from his fancy, or outside of his individual herd.

In addition to the natural tendencies above stated, there is a certain amount of acquired knowledge necessary to success. The old idea that anybody can breed fine hogs successfully is a fallacy only too well attested by the number of failures already taken place. After the breeder has determined the breed he will handle, he should study to know as much about that particular breed as possible, and should be a student as long as he continues in the business, and he will not know too much then. Successful breeding requires a greater amount of knowledge, forethought and experience than a great many suppose; but once in the business a short time they are fully convinced of their error.

How to care for swine is a problem that has never been solved—much less the more intricate problem of proper crosses. In this the breeder strives to preserve and improve the good qualities of the breed, guarding with equal care against any tendency to weakness in any of these points, and this he only attains by the most careful and judicious selection of breeding animals of both sexes. This he is not able to do until he has become well acquainted with the form and characteristics of the breed, and has given close and intelligent attention to the peculiarities, desirable and undesirable, of the different types, and also the natural tendencies of the different families of the same breed.

With all the knowledge, forethought and experience that can be brought to bear, it is barely possible to produce the perfect pig, but not at all probable. The breeder who approximates it occasionally may consider himself lucky, if not successful.

The breeder's success or failure depends largely on care and management. "Nurture" is as great an improver as "nature." It has been said that "a short nose is fed there, and a long nose is starved there." The most finely-bred and best-formed animals deteriorate very rapidly with bad management.

The breeder, to be successful, has another end to accomplish that is as hard to obtain, and is of as great importance as any other branch of the business, and that is, to gain the confidence of the public, and especially that of his fellow-breeders. Without this confidence the breeder can only expect partial success at best. This confidence is not gained in a month or a year. Neither is it gained by the breeder who is constantly finding fault with every breeder's stock except his own, and who never loses an opportunity to present the merits of his own stock, both in season and out. Neither is it gained by the breeder who is always "kicking" and suspecting "jobbery" and "crookedness" of his fellow-breeders when in the show ring. This confidence is a growth, receiving its nourishment from the honor and integrity of the breeder. The successful breeder will so conduct his business that the question of honor can never be successfully raised against him—not even in the show ring.

Some breeders make the mistake (and it is honestly made, no doubt), in thinking all the animals they produce are fit for the breeding pen. It is better to miss a sale than to make an unsatisfactory one. Every animal sold is an advertisement, either in favor or against the breeder. The successful way to remove the temptation to ship inferior animals is a judicious use of the knife early in the season.

This brings us to the last point, but not the least— to find a market for the surplus stock. This with a great many is a grave question, and especially with breeders of limited means or those who breed but few. The successful roads to market are plain and hard trodden—the "show ring" and "printers' ink." A breeder may succeed in finding a market by showing alone, or by advertising alone; but the surest way to success is a liberal use of both means.

DISCUSSION.

W. C. Williams. It is an excellent paper and contains much valuable information.

Thomas Nelson. I corroborate what Mr. Williams has said. There is a point in it of which I wish to speak. He said it was difficult to get what you are breeding for. I am not raising many hogs this year. I did raise the Berkshire and had no trouble when I made proper selections. If I bred for a heavy ham I usually got it; also light, if I bred that way.

Mr. Mitchell. That point in regard to giving satisfaction in sales is well put, and should be impressed on the minds of breeders. What a man sells should be as a walking advertisement. That is the good feature of this paper. It makes no difference what kind of an animal it is, it should be a rule of action to see that the best goes out, and as honorable friends, stand together. If any member becomes tricky, the by-laws of the Association should make it a duty to expose such a man.

D. L. Thomas offered the following resolution:

WHEREAS, Certain foreign countries have made the damaging charge that American pork products are unwholesome, and that said charge interferes with the exportation of said products; and,

WHEREAS, Said countries have failed to sustain said charges, yet let them remain as a standing menace to our industry—

Resolved, That we call upon Congress to inquire into the treaty obligations with those countries, and if the same have been violated in letter or spirit in this respect, we demand the abrogation of said treaties.

Pending the adoption of the resolution the following discussion ensued:

D. L. Thomas. I have given this subject much thought, and heard it discussed in the National Convention more than once. For Germany and France to forbid the exportation of American pork products to those countries is damaging us greatly. The point is simply this: They put this restriction on the pork products to protect their own people, under pretence of its being unwholesome food. Germany has not pointed out a single instance of any man in Europe having been injured by eating American pork. Making the charges they have has alarmed all the nations of Europe, and they have ceased to buy American pork on that account. While they have a right to rule out our pork, we want them to withdraw this charge and treat us fairly. I am satisfied they are violating the spirit of the treaty between these countries, if not the letter.

Mr. Mitchell. I hope this resolution will be adopted. This is important to the agriculture of the country, and we propose to abrogate the treaty stipulations entered into with all the nations of the world. We have the power at home to remove the restriction. This is a political year, and it is our duty to inquire of the candidates for Congress whether they will pass laws in our interest if elected. You have got the power at home, both in the State and Nation. We want these breeders to approach the National Legislature and let them know we won't vote for any unless they do remove it.

D. L. Thomas. I have had some experience in getting pledges during political campaigns. A man running for Congress promises anything we ask, but when he gets there he forgets our interests. We should keep agitating this question until we do obtain relief. If they have violated the treaty obligation our country should consider it null and void. They have damaged us in the markets of the world. All other European countries have declared against it. They are alarmed and are afraid to eat our pork. Unless they can establish the fact that they have been damaged, they should withdraw the charge. I hope the motion will prevail.

The resolution was adopted.

Mr. Mustard. The article of Mr. Mints is a valuable one. I appreciate it much. In my case I find it difficult sometimes to get just what I want. Like begets like, but like don't always strike in the same place. The progeny of the same sow and boar are not always alike; the litters are not so well developed sometimes as at other times. As a theory, like begets like, but in some instances they do not blend together and give the same satisfaction.

Mr. Lloyd Mugg presented the following resolution, which was adopted:

Resolved, That we request the State Board of Agriculture to provide an expert judge for swine at our next State Fair. The Poland Chinas to be judged by the Central Record Scale of points, and other breeds by their recognized standards.

W. C. Williams offered the following, which was adopted, after a brief discussion:

Resolved, That the State Board of Agriculture be requested to make two herd premiums in the swine classes; one for one boar and four sows one year old and over, and the other for the same under one year.

Mr. Mugg. I am in favor of a herd one year old and over. At the St. Louis organization of swine breeders they have adopted this rule. I think it would be right to ask the State Board to make this change.

I. N. Barker. If that resolution passes we should ask the State Board to make a list under one year old. If you pass this resolution and not a similar one for younger hogs, all the young are excluded.

D. L. Thomas. I understand the motion is one boar and four sows over one year old and a boar and four sows under one year old.

T. M. Reveal offered the following resolutions:

Resolved, That our State Board be requested to provide three premiums on all classes for swine, the third premium to consist of a diploma.

Resolved, That this association acquiesce in the movement of the State Board of Agriculture to secure new fair grounds.

Pending their adoption, the following discussion ensued:

Mr. Mugg. Will it conflict with the by-laws of the State Board? If it does, we do not want to vote for anything that is detrimental to them.

W. E. Jackson. We are only voting "to request the State Board."

T. M. Reveal. I understand this Association should ask what we want of the State Board, and they will grant it, if it is practical. While I am on my feet I would ask if all the breeders have been shipping at single rates by express companies.

To which question a number expressed themselves as not being so favored by express companies.

On motion, G. W. Thomas, T. M. Reveal and James Mustard were appointed a committee to secure permanent single rates of express on pigs shipped.

Officers for the ensuing year were elected as follows:

President—D. L. Thomas, Rushville, Ind.
Vice President—I. N. Barker, Thorntown, Ind.
Secretary—W. E. Jackson, Knightstown, Ind.
Treasurer—A. S. Gilmore, Greensburg, Ind.
Executive Committee—W. C. Williams, Knightstown, Ind.; T. M. Reveal, Clermont, Ind.; James Mustard, Broad Ripple, Ind.

REMARKS OF GOVERNOR GRAY.

Mr. President and Gentlemen of the Swine Breeders' Association of Indiana:

I am here in response to an invitation to visit your Association. I am happy to meet you, and feel highly complimented indeed to call upon you to-day. As chief executive of the State and an old resident of Indiana I can not but feel a deep interest in all the associations of the State, organized for the purpose of developing the industries and enterprises in every direction. We have now an association of Swine Breeders, Shorthorn Breeders, Bee Keepers, and Wool Growers of Indiana, all organized for the development of the several industries, and every citizen of the State has a pride in the name, wealth, growth and development of your interests. Every person will understand that organized intelligence will always accomplish more than individual, especially when directed to one purpose or object. You who meet here are engaged in the swine business. You have interchange of opinions and discussion on the questions relating to that industry. It must be instructive to you, and no doubt you learn as much in a single meeting of this kind in regard to your vocation, that otherwise would take years to learn. I can look back and see a vast difference between the stock of to-day and that of thirty-five and forty years ago. Farmers engaged in stock raising have to learn by experience. It does not take any more to feed a well-bred animal than one of the worst kind. There is a great field to develop yet in the future so far as the breeding of stock is concerned, notwithstanding the improvement to-day. In the breeding of swine, horses and cattle of the State in the twenty-five or thirty years to come you will be far in advance of twenty-five or thirty years ago. You had no associations of this kind then. Every farmer then learned by his own experience, as few papers were published and devoted to the interest of stock raising. Now you have papers devoted to it which are beneficial to your interests. If I understand the nature of this Association it is one in which every citizen in Indiana should feel a deep interest.

I have not come to make a speech to you. There are few associations so pleasant to me to go before or more interesting, if I could leave my office to hear the discussions by those who belong to them. Ever since man has existed he has derived his sustenance from the earth, from which underlies the prosperity of the country. Cities, railways and manufactories rest upon the vocation that you men are engaged in.

Take the manufacturer and those engaged in the tillage of the soil; one can not exist without the other, and as long as the farmer and stock-raiser add to the wealth and well-being of the State and nation, we shall be prosperous. With a love of country and deep love of vocation at heart, nothing can harm our great Republic. We should have an interest outside of that. We should have a pride in the State of Indiana. Its soil stretches from the Ohio River to the Lakes, lying in the great pathway of commerce from ocean to ocean, and almost all of it fit for cultivation or will be in a few years. An ample supply of valuable timber is also an important feature, ranking it one of the foremost States in the Union. The climate is desirable, and we look forward to the future of Indiana with pride and interest. Now, gentlemen, I have said more than I expected to say. I am glad to meet you, but I could not say anything that would instruct you on what you have met to consider, as all have more knowledge than I have on that subject. I was raised on the farm up to twenty or twenty-one years of age. We did not then have such hogs in the country as now. We had the old bar-share plow, and grain cradle to reap the grain. But never will I fail to remember the beautiful sight it always was to me, and would be to-day—the eight or ten grain cradlers keeping the stroke. It used to be my work to carry water to the field for the hands. I have thought I would like to see those old times back again. There was a hospitality among farmers to help each other. In the neighborhood where my father resided a farmer lived who was in poor circumstances. Harvest time came on and he was taken sick, and himself and family were in distress as to how they would get their crop saved. A number of the neighbors assembled at my father's house, and went in the night and cut the grain without his knowledge. Now you have machinery for harvesting your grain and sulky plow to aid you in your work. I do not know what other improvements there are in the future, but I hope there are many. I hope your meeting may be interesting and instructive and you may reach your several homes in safety, and I may have the pleasure in the future to meet you again. I thank you for the pleasure of appearing before you, and consider it an honor, indeed. I would be happy to remain and hear the discussions, but my business is such I must ask to be excused.

DISCUSSION ON FAIR GROUND.

Mr. Kingsbury. We of the *Indiana Farmer* have long contended for a change of fair ground, so it may be on some line of railroad. Near the Belt Road there is a tract of ground belonging to the State which we thought might be secured. To me it seems a desirable location.

J. W. Robe. I visited the fair ground during the meeting of the State Board. There are a number of buildings which would be almost a total loss were a change made. Another objection is, we think the grounds proposed too small. There is a nice spot back of the present grounds which would be ample enough.

Fielding Beeler. Something may be said on both sides. After some experience in superintending the fair, I am satisfied it is a bad policy to move it, as there would be a vast amount of expense attached. There is, as Mr. Robe suggested, a tract of ground north of the present one which would be good. As to railroad facilities, there is no railroad track to the present St. Louis ground, and it is largely attended. The facilities for reaching the present fair grounds here by street-car line are somewhat difficult at times, but going to the new grounds by rail may be obstructed by freight trains and cause delay. There is also danger of people getting hurt by moving trains so near the grounds. The present grounds are less than one-half mile from a railroad track already, and I have no doubt a stopping place can be made there to unload stock, and perhaps a temporary track might be laid to the grounds. This question should be left to the State Board of Agriculture.

The following committee was appointed to attend the National Swine Breeders' Association, viz.: W. E. Jackson, A. S. Gilmore, John A. Deem, L. Mugg and D. L. Thomas.

Convention adjourned *sine die.*

INDIANA BEE KEEPERS.

The seventh annual meeting of the Indiana Bee Keepers' Association met in the rooms of the State Board of Agriculture January 20, 1886, at 1:30 o'clock P. M., with President Scholl, of Fayette county, in the chair.

Secretary Daugherty submitted his report, as follows:

Mr. President:—For an extended report of the proceedings of our last meeting I would respectfully refer you to the annual reports of Secretary Heron, of the State Board of Agriculture, a number of which have been placed at our disposal. Since my last report I have collected dues to the amount of $40.50, all of which I have turned over to the treasurer, taking her receipt for the same.

Treasurer Mrs. E. Stout submitted the following report:

Balance on hand	$0 56
Received from secretary	40 50
Total	$41 06

DISBURSEMENTS.

Central Printing Company	$7 00	
Postage	6 25	
Stenographer's report	10 00	
Janitor's fee	1 00	
Total		24 25
Balance on hand		$16 81

A communication from Prof. Troop, of Purdue University, was read and referred to the executive committee.

Mr. Cotton, from the committee on constitution, submitted the following report, which was adopted:

Mr. President:—Your committee would recommend to strike out Article VI, VII and VIII of the Constitution and insert Article VI, as follows: "Any person interested in bee culture may become a member of this society by signing the constitution and on payment of the fee of fifty cents annually to the treasurer."

President Jonas Scholl then delivered his

ANNUAL ADDRESS.

Ladies and Gentlemen:

With kind greeting to all we meet in this, the seventh annual convention of our Association, and I trust we come with none but pleasant memories of past meetings and a determination to make this a still better and more profitable gathering of co-workers in one of the most interesting and attractive industries.

Interesting because of the rapid march of progress made by the bee-keepers of the United States, and doubly interesting because of the mystery—to some extent—still connected with the business, and the possibilities yet before us. Would any one think for a moment that perfection has been gained? Perhaps some of us thought so a few years ago. But look at the changes that the last five years have brought about, and who will doubt that the next five years will bring still greater developments and decided improvements over what we now consider good enough.

Are we making progress as individual beekeepers? then we cannot fail to progress also as an Association.

While we all feel the necessity of thought and study in this as well as any other business, yet we will find that success comes not from the knowledge we have of bees and their habits unless that knowledge is put in practice. So it is also in the

WORK OF AN ASSOCIATION.

Men of thought and business habits who can do their part to enlighten the public on questions pertaining to bees and honey cannot fail to be themselves benefited by these meetings in which we compare notes and report our success and failures; our success, that we may encourage and stimulate others; our failures, that we may thereby save time and expense to those who in their enthusiasm for beekeeping would rush into the business expecting to make a fortune speedily.

The work before us calls for the best possible use of the short time we will have in which to discuss the important subjects that claim our attention at this meeting. Let us then enter into the work with the spirit of progress. There is an

INCREASING DESIRE

on the part of the people for information that will enable them to succeed in bee culture, at least to the extent of supplying their own tables with honey.

The past winter has been a remarkable one, a winter of unusual severity, causing a fearful destruction of bees in some parts of the State. While the spring and summer were in the main favorable for an increase of colonies, but little surplus was obtained and that only in favored localities. The statistics of 1885 show a large reduction in the number of colonies and pounds of honey. With our home markets almost bare of honey, we have good reason to expect better prices for what can be produced next season.

The progressive beekeeper, however, will not concern himself so much about an increase of price for his crop, as how to raise honey at less cost, so that he can well afford to take current prices. And with the facilities and improvements now at our command, we should be able to produce honey at a fair profit, even if compelled to take lower prices than were obtained the last two years. The cry of

ADULTERATION

Is still sounded in our ears occasionally, and while we may not be able to silence it entirely, it now seems to me that beekeepers have but little to fear from the sensational articles published in newspapers, charging all honey as adulteration. The majority of such articles are written by persons who know but little about honey. Let every producer see to it that he puts on the market nothing but a first-class article of honey, and then pay no attention to the insinuations of adulteration unless actually necessary to defend himself.

Permit me to call your attention to a matter of importance and worth your attention and most careful experiments. I refer to

SOLAR EVAPORATION OF EXTRACTED HONEY.

We all admit the superior quality of honey that is allowed to remain in the hive to the close of the honey season, when it is all capped, and thoroughly ripened by the heat of the bees. But we know also that this diminishes the yield very much. If, therefore, the same object can be accomplished by the concentrated heat of the sun, I would say, all honor to the man who will perfect an arrangement for ripening honey by solar heat.

On the third of September last, I attended the fall meeting of the

EASTERN INDIANA BEEKEEPERS,

Held at Richmond. Although the attendance was not large, a lively interest was shown in the discussion. They hold two meetings each year—in April and September. Their officers gave me the best assurance of kind feelings toward the State Association, and that they have no desire whatever to act in opposition to this society.

At our last meeting, delegates were elected to the Bee Congress, at New Orleans, and also to the National Convention, at Detroit. I trust we will have at least a short report of each meeting by those who were in attendance.

We all rejoice to learn that the next meeting of the

NORTH AMERICAN BEEKEEPERS' SOCIETY

Will be held in this city, and now let us take the necessary steps to give a hearty welcome to the National Society, which, after an absence of thirteen years, returns once more to Indianapolis. Here it was organized in 1870, and met here in 1872. I would recommend that a committee be appointed to make such preparations as will insure our brother beekeepers from abroad a hearty and welcome reception. The parent society has been, and is yet, a power for good in the interests of beekeeping.

Hoping that your deliberations may be productive of good, I return to you the trust committed to me one year ago, thanking you for the honor and your confidence.

DISCUSSION.

C. F. Muth. President Scholl has given us a good address. He says that solar evaporation would or might improve the quality of honey. I do not think it does. This is a subject we should be instructed in. Honey does not improve in quality if left in the hive late in the season. It gets its flavor from the blossom and nothing else. The quality is only improved by evaporation; the water is evaporated or absorbed, but the flavor is not improved.

Mr. Johnson. There is one point regarding adulteration of which I wish to speak. It seems to me the bee journals over-estimate the damage by continually harping on and keeping their minds filled with the idea of adulteration. Regarding solar evaporation, it seems to me there is a difference in the flavor of honey when ripened in or out of the hive. I have made some experiments, and can tell a difference. The unsealed honey is a little lighter in color than that which is sealed, yet there was a thick, smooth, pleasant taste to the capped honey which the other did not have. Both samples have become thick and firm as tallow now, and there is a marked difference in taste. I have an idea that the cause of this is a deposit of formic acid from the bee.

Mr. Leming. My experience is that honey gathered in dry weather, taken out as fast as stored and placed in a proper place, where it can receive the right degree of heat, will ripen up better than that sealed in the hive. Bees frequently begin storing, and before the hive is filled and sealed a rain comes, water gets in the honey, which is sealed up with it, and injures that fine, peculiar honey flavor so apparent in a dry time.

Mr. Lane. The report of Prof. Wiley on the ten samples of honey given him for analysis is not in every respect satisfactory. No. 5 extracted honey, according to his report, was at least one-half adulterated. Mr. Leming is correct in regard to extracted honey being equally as good, if not better, than that sealed in the hive.

Mr. Leming. I would not mix pure honey with that which is inferior in quality.

Mr. Muth. What is inferior honey?

Mr. Leming. It is honey gathered when the dew is on. By mixing the good and bad together you spoil both.

Mr. Cotton. Mr. Leming, how do you keep them from mixing? I have cells filled up all through the day, from early morning till night.

Mr. Leming. I would keep that which is stored in rainy weather separate. If you want the best of honey, extract during dry weather and keep it separate from that extracted in wet weather.

Mr. Muth. It is necessary to extract at the right time, or results will not be so satisfactory. Honey is cheap in this country because there is an over-production, and we can not sell on account of the large amount of glucose and adulterated honey put on the market. In Chicago there are heavy commission houses which make a business of selling adulterated honey; they can not sell it there, but they ship it West; it is only about one-fifth part of the barrel pure honey. The amount of honey produced can not be used on the tables, so we must get manufacturers to use it. Some of them do so to a limited extent, and more would were it not for the glucose thrown on the market. I have had customers come to me for awhile, and then come no more. Upon inquiry I found that they bought elsewhere an article, perhaps one-third or one-fifth honey, because they could get it cheaper. We should endeavor to convince the people of the superiority of pure honey over that which is adulterated. Prof. Wiley, I hope, is sincere in his report on the samples analyzed, but in this he makes a mistake in my opinion. Honey is grape sugar, and should not be mixed with other sugar which is different entirely. If there is grape sugar in honey, we should not say it is pure sugar. Cane sugar is sucrose.

Mr. Nolton. Starch is very similarly composed to grape sugar, although the particles are differently adhered. That which is produced out of starch contains an acid, while that in honey is pure sugar.

Mr. T. S. Bull. Notwithstanding there is much adulterated honey sold in Chicago, yet the demand for pure honey can not be supplied for confectionery purposes. Four years ago a gentleman of my acquaintance, in the bakery business, did not buy any; now he buys large quantities for use in his business.

The Secretary read the following paper prepared by Mrs. L. Harrison, on "The Educational Powers of a Bee-Keepers' Convention":

Prominent among the great educators of our time and day, for the people at large, are expositions, fairs, meetings and conventions. The different State societies which pertain to specialties of agriculture, such as dairying, wool growing, swine breeding, poultry raising, fruit and cane growing, have their annual meetings in this hall, and bee-keeping ranks in importance with them. Those who respond to a call for a convention have a common interest; they cling together like bees in a swarm for mutual benefit, for "in the multitude of counselors there is safety."

The subjects that are up for discussion at a bee-keepers' convention, are of mutual interest to bee-keepers, whether dwelling in a remote canon on a bleak prairie or the amateur keeping a few colonies for recreation on the housetop of a marble palace in a great city. The varied interest of the naturalist, horticulturist, entymologist and bee culturist center in one, like the spokes of a wheel, and at the call for a convention rally together by mutual attraction, as the war-horse "smelleth the battle afar."

The educating power of coming in contact with our fellow-men is apparent to all. Thoughts spring up quickly, as if by magic, and pass like lightning flashes, illuminating all around. Many restless individuals have not patience or inclination to peruse the printed page, yet eagerly imbibe the thoughts and words of others as they fall from the lips of living authors.

There are those who possess the rare faculty of imparting genial and illuminating rays to large bodies of people. Who has not felt the invisible presence of silent angels, singing, "on earth peace and good will toward men," as Father Langstroth enters the hall? His magnetism or great big heart attracts all eyes, and when he leaves an aching void is felt and tears course down cheeks unused to weep.

Many of those who attend bee conventions and lead in the discussions have made bee culture the study of a lifetime, and yet never convey to the world their thoughts and discoveries, through the medium of the press. Here their ideas and practical workings are taken up by others, who enroll them in the fund of general knowledge. Here are also to be met the writers of bee literature, and when authors and readers are personally acquainted, it lends new charm to the printed page; then every thought expressed appears in living characters.

By a careful examination of the implemeats used in modern apiculture, which are here on exhibition, a knowledge of which are of the best make and best fitted for the use for which they are designed, may be obtained.

PEORIA, ILL.

The following committee was appointed to make arrangements for the holding of the next National Bee Convention in this city:

F. L. Daugherty, I. N. Cotton, S. Johnson, Mrs. Robbins, and Mrs. Landers.

BEE PASTURE.

Mr. Davis. Bee pasture is an important factor in apiculture. I have a little experience with Alsike clovor. A man who has a farm of eighty or one hundred acres, where he can utilize it for other purposes, it will probably pay, but for a man with five, six or even ten acres, it would not. A man in our county (Hendricks) had some of this clover last season, and had fifty or sixty colonies of bees. He lost five hundred pounds of honey by the Alsike clover. The bees were spending their time on that when they should have been on the white clover. The question is whether it will do for honey or not. I doubt it very much. It is excellent for feed. I believe it is the best clover hay I have ever fed, and it yields enormously. It paid me well outside of the honey obtained from it. During the time of that bloom there was none on the white clover. When the Alsike begins to fail they will then go to white clover. If a man is running a farm in connection with bee culture, it will be very profitable outside of the honey crop. It is well to plant raspberries and blackberries, which are all good so far as they go.

Question. How much hay does it yield per acre?

Mr. Davis. It is better than red clover. The English clover (by some called the pea vine) is excellent for bees. The Italians work on it well. I have never seen a black bee working on common clover yet, but last season after the white clover was gone they worked on the English clover equal to the white. Going into the field last summer, I found it like a swarm of bees on hand. However, they don't work so well every year. Year before last our honey was nearly all from red clover.

Mr. Cotton. The theory that we lose honey by having Alsike clover is preposterous. I don't believe it. Bees will hunt honey from certain class of bloom. They go to the raspberry and extract all they can get and then go to the next best. This is their instinct. They first collect from the black locust and follow right on down as the blooming season comes on. Some years we have but little honey in different localities, while at other times we have more. It is the same with white clover. I have often found bees in the valleys when there were comparatively none on the hillsides, which indicates a better flow of honey than on the hills.

Mr. Leming. Does the Alsike require the same temperature to produce a flow of honey as the white clover?

Mr. Davis. I can not give any information in regard to it.

Mr. Leming. Will bees work on Alsike clover when the dew is on?

Mr. Davis. Perhaps not so much as on other bloom.

Mr. Lane. Bees work on Alsike clover but very little until about eight or ten o'clock. Other blooms secrete nectar in the night and the bees are ready for it early in the morning. They will not work on anything but what has honey. White clover is a peculiar plant; a little current of air will stop the flow of honey. A bee will go where the secretion is. I have found bees on ragweed, and they will sometimes rob others. The Alsike will secrete honey when white clover will not. It is our duty to use every effort to induce farmers to sow Alsike clover. Aside from being valuable as a honey plant it makes the best of hay.

Mr. Davis. My experience is that it is superior to timothy. I have tested this by giving both timothy and Alsike to my horses at the same time. They will eat the clover first.

Mr. Nolton. When is the proper time to cut it?

Mr. Davis. When it is going out of bloom.

Mr. Nolton. The Alsike clover will grow on wet soil better than any other kind I have tried to raise. I have raised it on ground that overflowed.

Mr. Cotton. Will it grow on high ground?

Mr. Nolton. Not so well; it prefers a damp soil. For pasture and hay it is equal to, if not better, than other grasses. We should have a succession of plants for bee pasture. For that purpose Alsike is the very thing. We can pasture it until the 15th of June, and then it will come on and make bloom for the bees and get a crop of hay or seed after that. The English clover comes after the Alsike, and succeeded well this year.

Mr. Rabb. I have raised the Alsike clover for four or five years. I find trouble with it on high ground. It will do well on rich ground. It will plant itself where I have been feeding my stock. I can not see any superiority over the white clover as a honey plant. The Alsike is excellent for feed; the straw is finer than the red or English. The English or common red will make more hay, but the quality is not so good.

Mr. Cox. I have raised Alsike clover for several years, and I find that bees will work on it before white clover. The honey made from the Alsike is a little darker than that made from the white.

Mr. Howland. Will the second growth of the Alsike slobber horses, as our red clover?

Mr. Lane. I am feeding the second crop of the Alsike clover, and it does not slobber horses, but I do not dare to feed the first crop.

Mr. Bull. In my apiary the bees begin near home, some in the yard, while some go out to the field. I sowed Chinese mustard near by which grew nicely, and the bees swarmed on it, and some would go to the country. It is hard to confine bees to a certain locality.

Mr. Davis. One-half bushel of Alsike seed will go as far as a bushel of red clover. It is a finer grass, and does not have a fuzz on the leaves and stem as the red, which makes a dust when you handle it.

EXTRACTED AND COMB HONEY.

DISCUSSION.

C. F. Muth. I am certain that extracted honey is in the greatest demand. However, there is much comb honey sold also. Unless manufacturers take the bulk of the honey we have a surplus on hand. I do not think in the city of New York there could be as much as one-tenth part of extracted sold for table use as of comb honey. In Cincinnati I believe the extracted honey has the greatest demand. Bee-keepers should raise that which they can sell best. It would be a difficult matter to say which has the greatest demand.

Mr. Lane. I never ship any honey, but sell at home. I have comb and extracted honey; some won't buy comb and others won't buy the extracted at any price. I have one customer who has bought one hundred and seventy pounds of comb honey since the 19th of August for his own use, and after he used that he did not want any more comb honey.

Mr. Bull. What is the average yield of your crop yearly?

Mr. Lane. Last year it was one hundred pounds to the colony. This year I got two thousand pounds from fourteen colonies.

Mr. Bull. I supply my home market, and have to ship. It requires a good market for eleven thousand pounds. For shipping I prefer extracted honey; there is much work about comb honey to get it to market in good shape.

Mr. Mason. The demand for extracted honey is increasing throughout the country; as soon as our consumers know they are getting honest honey extracted, they will take it before comb honey. I have got customers who won't use comb honey if they can get that which is extracted. I have been called on largely since my stock run out at fifteen cents per pound. We must educate the people to it, get the honey well ripened, and they will take it. The time is not far distant when extracted honey will be far preferable to comb honey.

Mr. Davis. Mr. Bull, at what figures did you sell your extracted and comb honey?

Mr. Bull. I sell my comb honey at fifteen cents per pound and my extracted at an average of ten cents per pound. I sell at all the leading groceries.

Mr. Davis. Which do you realize the most from, comb at fifteen cents per pound, or extracted at ten cents per pound?

Mr. Bull. I could not tell. I keep my cases full all the time and never struck a balance. Many people throughout the world would use extracted honey if they were sure it was pure.

Mr. Muth. Twenty years ago I raised at Cincinnati five hundred pounds of honey and put it in three-pounds jars. I thought it was a pile and wondered what I would do with, it but I sold it all. The amount raised and the demand are increasing. I don't believe anyone here has as large a home trade as we have; for the last twelve months it was very near 500,000 pounds. It shows how people can be educated. You can't go to Chicago and sell extracted honey in a store; you can't find ten dozen bottles, take all the stores together. I have tried in New York, and you can't find it, and it can't be sold extracted because they think extracted is adulterated.

EVENING SESSION.

The Convention met, President Scholl in the chair.

Mr. Muth being requested to give a report of his visit to the Bee Convention, at New Orleans, said:

"The meeting was interesting but nothing particularly new was advanced with one exception: we can not ship honey in barrels the same as syrup; this is a matter of importance. Regarding bee culture there was nothing developed but what we know. A matter of importance to me and our friends was a little experience in Florida. I went to see Mr. Hart, a friend of mine, on the Atlantic coast. He procured a little sailboat and took me around to the beekeepers on the coast islands not more than thirty or forty miles from the shore.

The mangrove is a peculiar plant, bushy in appearance, growing some ten or fifteen feet high and found plentiful on those islands. The mangrove bush blooms in the month of June, giving a blossom holding almost a thimbleful of honey. Here bees breed all the year round. With proper management of bees, in December or January they can get honey. From one stand in January they can produce five in June if need be, and the bees are strong. Their hives are two and three stories high and their brood chambers are full by the beginning of the mangrove bloom. The bees don't think of swarming until this is filled up. It is very essential to give bees room to breed. The mangrove bloom is enormous and they gather much honey from it some years. This year they did not get much honey. Those who manage well often get large returns. Those *crackers* in Florida are lazy and do not attend to business as they should. Florida is one of the greatest honey-producing countries in the world. California is only sure about one in five or six years, while in Florida it is every year. They have many advantages over us. Bees do not get winter killed or die with dysentery as they do here. Moths do not eat up their combs, but they keep breeding all the time and up to June there is brood. The quality of the honey is good and nice and light in color as any, pleasant to the taste with no outside flavor as clover or basswood honey.

Mr. Daugherty. Do they get enough from the first of January to keep them breeding all the year?

Mr. Muth. Yes; all the year round. There may be a week or two when they don't get much honey. They must not take the honey off too close, but, usually, they have only to prepare up to the first of June. On account of the peculiarity of the climate, it being close to the ocean, they can not raise comb honey satisfactorily, as the cells are concave and unsightly, and would not be salable; the reason of this is on account of moist temperature. Honey in open vessels standing over night becomes thinner. It is a very peculiar temperature. Comb honey will not do there. A friend of mine tried to sell a lot of comb honey in Jacksonville, but it was unsalable.

Mr. Reynolds gave a short account of his visit to the National Bee Convention at Detroit. He said:

It was an interesting meeting. The beekeepers of the North are ahead of Indiana beekeepers. During the sessions a large number of important subjects were discussed. There was a paper from Prof. McClain, which contained much valuable information and suggestions which I want some of the beekeepers to try another season. Its publication had to be withheld until published at Washington, he being connected with the department. In the North they winter both out of doors and in the cellar. When out of doors they pack heavily, giving them sixteen inches packing. Mr. Jones wintered eight hundred colonies in this way. J. B. Hill winters in cellars. The secret is to keep them warm and give them plenty of room. The temperature should not fall below forty-eight degrees while in the cellar.

Question. What would be the result of keeping them cold and then warm?

Mr. Reynolds. An even temperature is best, but warm and moist. They get uneasy in a warm, dry cellar, and do not do so well.

Mr. Nolton. From what we have heard from the National Association, I infer that Indiana loses more bees by dampness than all other causes combined.

Mr. C. F. Muth, of Cincinnati, read a paper as follows:

Is pollen in winter the cause of dysentery among bees? If not, what is the cause, and how prevented?

The "pollen theory" was brought up, I believe, by Brother James Heddon, and has had an abundance of discussion in connection with wintering. The best bee-keepers differ widely in this matter, and the problem seems still unsolved.

The causes of dysentery are very likely the same, but appear different because looked at by different persons and under different surrounding circumstances.

Pollen is a nitrogenous food and wholesome. Without it the existence of the bee would be an impossibility. The larvæ derive from it their body, and it is essential to animal growth. Pollen preserves for years its nutritious qualities if kept dry, but it sours in a damp place like other farinaceous matter, and swells over the brim of the cells, In such condition it has lost its wholesomeness and is not any more the pollen we were talking about. Bees will get sick if they are obliged to use it.

About the same can be said of honey. It will keep forever in a dry place, even in open vessels and exposed to the sun. But it will sour in a damp cellar, and the tendency to sour will increase with the height of the temperature. Sugar syrup will sour in a warm place which need not be damp. A good many reports from a number of our friends that sugar syrup would not save the lives of their bees sustains my argument.

There are several points we should remember when putting up our bees for winter, to-wit: Bees can create a great amount of heat when in a cluster and well supplied with healthy food. The next is that their exhalations condense into water when the outside air is colder than the temperature of their hive. The moisture will increase with the falling of the thermometer, and if it can not escape as fast as created, combs and insides of hives become mouldy, and their honey and pollen turn sour and become decomposed.

I don't think that anybody has seen yet a colony of bees that died of dysentery without mouldy combs and sour honey in those parts on which they clustered.

Perhaps most of us remember the old box hives, without a bottom board and each corner standing on a pebble or a block an inch or two above a plank.

Mouldy combs and dysentery were unknown to those fortunate bee-keepers, and if a loss in winter occurred it was a case of starvation every time. Those ignorami had, accidentally, an advantage over us scientifics. Let us make a note of it.

If you want mouldy combs and dysentery during winter cover your hives up tight and contract the entrance to about an inch or less. The severer the winter, the more your bees will be affected. Try it, and if you lose most of your bees by dysentery, take any scapegoat you please, but don't blame the pollen nor the fall honey.

If you want your bees to winter well, confine them to their brood-chamber and let each colony have plenty of honey. Fall honey is as wholesome as the best clover, and it makes no difference if the most of it is capped or uncapped, nor is there any difference as to the amount of pollen you leave them. Have the entrance wide open and place in the upper story, on the covers of the brood-chamber, a straw mat or its equivalent. These covers are usually composed of three boards, so-called "third covers." If they fit together very tight, I should bore an inch-hole in one of them, which admits of the necessary upward ventilation, while the straw mat on top prevents draught and keeps off the cold. There will be no mouldy combs and no dysentery. Try it, and if you fail by this method to winter your bees as well as the box-hive men of old, let us know it.

I have read and heard, of late, some fine arguments on pollen and wintering, theories based apparently on scientific principles, but they could not withstand the solid matter-of-fact arguments brought to bear against them at the late National Meeting, at Detroit. Unless substantiated, the most plausible theories must be discarded. Parties in the North winter their bees in cellars; in dry cellars and in damp cellars; have them breed up, so that when they set them out in April or May their colonies have no brood in seven, eight or nine frames, but seven, eight or nine frames full of brood, almost ready to swarm. The veracity of each of these men need not be doubted. The one with a dry cellar maintains a temperature not above 40 to 50°, while the damp cellar winterer runs the temperature as high as 50 to 90°. Pollen is consumed or brood could not be reared, but no dysentery develops.

Neither pollen nor honey is the cause of dysentery, according to my observation, but cause either of them to be decomposed, then it will act like poison; the same as mouldy corn would affect your stock, or decomposed meat the human family.

DISCUSSION.

Mr. Bull. This is an able paper we have just heard. If we put honey, capped or uncapped, in warm cellars it will sour. It will do so sometimes in the hive. The bees have to cluster together to keep warm. The honey and pollen both sours, and the bees have to feed on this and it makes them sick.

Mr. Lane. Mr. Muth's address is deep and ably written, and, in the main, true; but after considering the climate and sudden changes in the weather I can not help thinking that many of the bees we lose would live through the winter if the pollen was removed from the hives. Whenever the bees consumed the pollen they would die. When I left them without any covering but a seven-eighth-inch board for protection, and fed on sugar, they went through, but if the pollen was left in they invariably died. It is not for the want of ventilation or protection that our bees die, because every one has a mode of putting up his bees. A cousin of mine for two successive years put up several colonies in his house; the first year a large per cent. of them died, and the next year but very few. It was not for the want of ventilation, because it was the same house and same kind of bees, and very little difference in the winters; it was undoubtedly the food they ate. It is not the locality, but it is some prime cause that produces this disaster.

Mr. Muth. I had twenty-six stands a year ago, and last winter lost all. I put off preparing them for winter until November, and when I commenced preparing them it turned cold and I had to quit at intervals for some weeks after. When the weather moderated I made attempts to prepare them, but cold weather would necessitate stoppage of the work. I am satisfied it is not pollen that killed them; it was neglect. If we prepare our bees properly and early we need not lose a single one.

Mr. Bull. The prime cause is cold, in my opinion; many circumstances make me think so. Two years ago a friend of mine had a bee house built in Valparaiso, in which bees wintered splendidly. He thought he had a nice thing, and put his bees in the next winter and lost all; he is firmly convinced now that it is cold. Another friend of mine put his in his cellar and lost all.

Mr. Muth. The colder the winter the more ventilation required.

Mr. Mason. The subject of wintering bees is of much interest to me, and how to meet with success the changes in the atmosphere, leads me to the conclusion that cold and damp are the causes of our losses. Last winter I took a new plan to winter my bees, which seemed to be a success, but in the spring, after setting out forty-seven colonies, I had eleven left. I had them in a small bee house, and it has been a mystery to me what caused them to die; my theory is aged dwindling. I put my bees in on the 19th of November, in good condition. On the 9th of January they took a fly, and then no more until the 4th of March. Those bees which died were in the hive, dry and bright, and had the appearance of smothering.

Mr. Muth. How were they covered?

Mr. Mason. They had the top on and one small cloth over the top of the bees. Hives had plenty of pollen and honey. The hives set on empty boxes, yet there was some dampness. The bees would get down on the bottom board, curl up and die. This winter they are in fine condition and perfectly quiet.

Mr. Bull. How cold did it get in the bee houses?

Mr. Mason. The temperature did not get below 28°; it was generally 40° to 45°.

Dr. Minnich. To the best of my recollection, when we had a drought, fifteen or sixteen years ago, the bees generally died. Dry weather is conducive to the secretion of honey dew, and if there is honey dew in the fall we may look for dysentery in the winter. The gentleman can not account for his loss of bees. We had a drought over a year ago, and honey dew was gathered instead of honey, which I think is the cause of this trouble. I fed my bees cane syrup that year with good results. Drought causes spring dwindling from old bees because there was no breeding going on in the dry fall preceding. Our bees are doing well now, but we had a good fall or it might have been otherwise.

Mr. Hill, of Ohio. I have had some experience in that and the gentleman is right. If the bees don't get anything, no matter how much they have in the hive, they stop breeding. If they breed in August, I want to feed them and have them to winter well. Some advocate breeding late, but young bees never stand the cold as well as old ones. Most always some of the bees will drop to the bottom of the hive and perish. I have had them breed on up to the first of September, but it requires feeding to keep them along. I have lost by dwindling, but when I properly cared for them, I have had them run through as cold winters as we have had, and not lose a colony. You must not put it off too late; this is essential. This honey dew is certainly bad to put in a hive.

Mr. Daugherty. This honey dew is dark and is from the maple bark lice We had one or two hives filled with it, and the honey was black and inferior in quality. Three years ago, as an experiment, I took five stands, raised the lid two and one-half inches, gathered leaves and threw in, and they came through the winter all right. Last winter I took five more, took the second story off, threw some leaves in and raised the lid eight inches. Some snow blew in, yet they lived through. Now I have ten with no second story, leaves thrown on, lid put on and all right yet.

Mr. Nolton. We must have foundation on which to build. Like causes produce like effects. One man winters his bees in his house successfully, while another meets with reverses out of doors, and *vice versa.* One man's live through one winter coming out with pollen, and next winter die with it. We can not attribute that to location. We must evidently look beyond this question. We may have preparation and protection made for wintering bees, but ventilation and plenty of bees are prime points. The hives and comb should be kept dry. If the cellar is damp they must have ventilation.

Mr. Johnson. Bees naturally belong to a warm climate. We bring them here to a cold climate and confine them for months at a time. We find from experience that they live without pollen and with it. They die with pollen and without it. We can not help but see there is no one cause for the loss of bees. Some want warm and dry, while others warm and damp. I have wintered for four years by keeping them warm and with good food. I winter out of doors with plenty of packing, and full wide entrance in winter and summer. I would say give plenty of air, good food and keep warm. You can do this by plenty of packing. As to pollen being the prime cause of disease among bees, I think it is not necessarily so. We often get a wrong conception as to what pollen is to raising bees. The pollen feeds the young bees. A year ago I placed some bees in a wire screen for six weeks and had no pollen from which to raise brood. I then inserted a piece of comb four inches square; within five days after pollen was introduced, the queen began to lay nicely, in the next six weeks the eggs hatched out bees, and no more sign of dysentery. This experiment was kept up for three and one-half months. Bees will consume pollen to rear bees. In winter hives should be packed well; not less than twelve inches of sawdust.

Mr. Muth. I take no pains to put any thing extra around my bees. I have a straw mat on the honey chamber; old rags, leaves, or chaff cushion are good, but keep the entrance open.

Question. Where do your bees cluster?

Mr. Muth. Mine cluster at the middle.

Mr. Johnson. How much honey will your bees consume to the colony?

Mr. Muth. My bees do not consume more than yours in the cellar. They may have thirty-five pounds of honey. During the time of apple bloom if they breed and find nothing they starve to death.

Mr. Johnson. How much does it require up to the time of apple bloom?

Mr. Muth. From fifteen to twenty-five pounds.

Mr. Johnson. How much did it take last winter?

Mr. Muth. I can not tell. I aim to have plenty of honey, every comb almost full,

Mr. Johnson. To keep bees alive through the winter they require a certain amount of heat. My bees in the last three years have not consumed on an average, from the 15th of October until the 15th of May, more than twelve pounds.

Mr. Lane. I took a colony of bees last fall and put on dry comb, fed fifteen pounds of granulated sugar, and have found no deed bees.

Mr. Coffin. My observation has been in wintering bees that they require plenty of stores. I want to keep them dry and give them plenty of ventilation. They will stand any amount of cold. A friend of mine said that he had an after swarm which settled in the orchard under an old sugar trough. There was a good flow of honey in the fall, from which they had gathered ample stores for the winter. While passing through the orchard in the spring his attention was attracted by a buzzing noise. Turning the trough over he found the bees in good condition. I give my bees good ventilation, covering them with a shed on the back part and letting the sun shine in on the front. If I have plenty of honey I seldom have any trouble.

Mr Leming. The gentleman is getting near the point. A friend of mine in Tipton County had a fine colony of bees in a box hive. He wanted me to look after the colony for him, and I was to have the bees and he the honey. The colony was strong and nice. After taking away the honey and bee bread I took fourteen pounds of sugar, feeding lightly for a week. After a week I put the feed in all at once; they did remarkably well, and I sold that stand for five dollars. For wintering they were put in a Langstroth hive and packed in four inches of chaff. They went through the winter and came out all right in the spring.

Mr. Nicholson. I have wintered bees for three years successfully by raising the lids about three inches.

Mr. Knowlton. How much honey will it take to produce a brood of bees?

Mr. Catterson. I am an unlucky man in wintering bees. In years past I have lost heavily. I took more pains last fall; put up thirty-seven colonies, and all were alive yesterday.

Mr. Daugherty. How did you put them away for the winter?

Mr. Catterson. I pack them over the frame in chaff. I do not leave them any chance to pass from one frame to another. I am wintering in the bee house, and they are doing well. The temperature outside has been eighteen degrees below zero, while on the inside two degrees above is the coldest.

Mr. Daugherty. I do not apologize for the loss of bees. I do not have the losses that Mr. Johnson speaks of. Mr. Johnson has told us about weighing the hive from the seller to ascertain the amount of honey consumed. There is no way to tell how many pounds they consume, except by the eye, on account of the brood which the combs will contain. We make many mistakes, because we do not follow up the idea long enough. I have some hives packed in chaff and some are not, and I don't believe anybody can see any difference between the chaff-packed hives and the others. I have tried many experiments with lime and ashes, and all kinds of absorbants, but without material difference. We want ventilation, but we must have something on the top to prevent a current of air.

Mr. ———. I winter with chaff hives and some without. I had no loss, except a few which starved to death. These nucleus had no protection except an oilcloth thrown over them, and came through all right, and bees were hatching out the first of April.

Mr. Thornton. From my experience last winter, chaff packing is a good thing. I put chaff on the side, three sticks on top and cushion on top of that. I have three frame nucleus packed in that way. I lifted the covers the other day and found them just as well as when they first went in. I keep the entrance open. I advised a friend of mine to feed to stimulate breeding during a drought. I fed also and mine wintered successfully, while his were lost.

Mr. Leming. The heaviest loss we had was two-story hives, not divided in the fall, but kept strong all summer. The greater portion went into winter quarters with seventy-five to eighty pounds of honey. One man had forty-eight and another twenty-eight colonies. The man which had forty-eight colonies lost all his except fourteen frames; they were not packed with the lids on tight. In the spring there were patches of brood which convinced me there was too much heat; they had become uneasy, and created an unnatural heat and went to breeding. Of the twenty-eight colonies there were but three left.

Mr. Johnson. We want to get at the best mode of wintering bees. Some advocate packing and some do not.

Mr. Knowlton. In the spring of 1873 I started with three colonies of bees. I doubled them during the first season and had three hundred and seventy-five pounds of honey. I sold one in the fall and carried the rest through. The next year doubled again, with fifty pounds of honey, making ten colonies, except one nucleus. This year I increased to twenty-two colonies, with ninety pounds of honey, and lost only one colony in three years. For wintering I put my bees in the fall in frames for them to cluster on, with plenty of honey for food, with partition board and flannel cushion on that, boring an inch auger hole on each side on the top, leaving the ends open also for ventilation. Last fall I fed some pure syrup from sugar, with fair success. Each colony will consume from a pint to a quart of syrup.

Mr. Robinson. The bees in my chaff hives died as bad as the rest of them. They would hold from one to two bushels of chaff. The chaff was put all around, above and below, except at the bottom. The honey in the hive was nice clover honey, mainly white clover. They died through December and January. There was considerable dampness in the hives, and a number of them had ice on the bottom board. I had an upper ventilation and entrance. The lower entrance was open from six to eight inches. This was in 1881. The bees were not diseased in the fall.

Mr. Cotton. In that year we struck bottom. I had fifty colonies that year, and not one left at Christmas. Some died in October. They lay in the hive in a bunch.

Dr. Minnich. This was the season of the great drouth. The earth was parched and crops failed. I feel that I am vindicated, for it was the drouth that caused the loss of his bees. As far as the drouth extended there was great loss of bees that season. There was honey dew, as is usual in dry weather. But the main idea is that when there is a drouth the queen stops laying, and if that state of affairs continues there will be nothing but old, worn-out bees to go into winter quarters with, and consequently they die. It is not so much the plan of packing, etc., as it is the kind of bees—I mean the AGE of the bees you pack away. That year I fed my bees with cane sugar and encouraged the queen to keep on laying, and my bees *all* lived and came out strong in the spring all right.

M. G. Reynolds, of Williamsburg, read the following paper on

SPRING MANAGEMENT OF BEES.

As I have been requested to open this discussion, I cheerfully comply, and if this paper fails to be instructive, do not attribute it to any desire of mine to keep apiculture in the dark.

What I understand by proper spring management is to get all colonies strong in bees by the time the honey harvest begins, which with us commences with white clover.

To be able to do this requires certain conditions. First, all queens must be prolific. This must be attended to the season before, and young prolific queens introduced in place of all old and unprolific queens. Second, successful wintering. This can be accomplished only by having stand stacks in the fall supplied with at least twenty-five pounds of stores. We want honey and pollen.

If wintered on summer stands, they should be well protected from cold and moisture. If in the cellar, it should be warm and dark, with no disturbance whatever. We winter on summer stands, and make it a point to go around twice during the winter and see that no entrance gets clogged. All dead bees are removed with a long, flat hook.

These conditions being complied with, we find, on looking over each colony, early in March, brood in one or two combs. All dead bees are now removed and combs containing brood, if not in the center, are placed there, with honey on each side. Empty combs are removed and the division board moved to contract the space. The packing is replaced so as to retain the heat of the cluster; this is not removed from the hive entirely until the weather becomes settled and warm.

Do not examine colonies too often in early spring, as the brood is very easily chilled, and all chilled brood is an entire loss. In about three weeks we examine each colony again, and in all colonies where the queen does not occupy all the combs that the bees can cover, the brood-nest is enlarged by uncapping a circle of honey around the brood. At this time the enamel cloth is placed over the colony to retain the moisture and prevent the bees from gnawing the cushion.

In regard to water when raising brood I will give an observation. Last April and May we supplied two colonies with water inside of the hive, accessable to the bees. A one-pint feeder had to be refilled in from five to seven days. Those two colonies remained *very* quiet and did not fly on cool, bad days, when other colonies did. They were among our very best colonies for honey. The condition of each colony is noted on a card and left in the top of the hive. Each week the yard is looked over and the brood raising is crowded to its full capacity.

As soon as the seven combs, on which we winter, are covered with bees the division-board is moved back, and a comb containing honey, with the cappings of the cells broken is placed in the center, which is filled with eggs in one or two days. In the absence of combs with honey in we put sugar syrup in them. This is repeated as often as the bees become strong enough, until the ten combs are all in the hive. We have never yet succeeded in having all colonies of uniform strength in May. The weaker stock that can not cover what combs the queen is capable of filling is given hatching brood from same strong stock. With us it does not pay to give brood to weak colonies, where such weakness is caused by unprolific queens. The surplus receptacle is given to each colony as soon as they become crowded. We have had colonies to occupy one and two cases during fruit bloom from such stocks. By giving room in time we have secured our largest yields.

If, when the harvest begins, we have colonies not strong enough to work in the sections they are united, for with our short surplus of honey-flow all hives run for comb honey must be crowded with bees at this time.

DISCUSSION.

Mr. Muth. I tried, a few years ago, with water, and did not find it successful. The bees would fly out anyhow to collect water, and not return. When a bee has water it becomes numb. I have seen my bees strike straight for the Miami Canal on coming out of the hive, to get water. Bees with a stomach full of cold water are liable to be blown down and lost. I have lost many bees by giving them water. It does not do for bees to be out in windy weather, and our losses in bees may be attributed to this in many cases.

Mr. Leming. Mr. Langstroth claims that it is essential that they should have water. Hence he says when bees begin to fly for water in the spring, if you take empty combs and fill them with honey or water, and place them at the entrance, it will stop the flying at once. I have never tried his plan, but after reading his statements and experiments in reference to that matter, I have been driven to the thought that there is something in it.

Mr. Muth. By laying sponges filled with water near the entrance may prevent them from going out.

Mr. Leming. Bees fly out for water, and after getting it they go on the hunt of food, and failing to obtain it, finally perish.

Mr. T. S. Bull. There is another reason assigned for this. When the bees leave the hive they leave with an empty stomach. They can't find honey and they don't get back. I have noticed in the spring, when the queen is brooding, they would not increase any; as soon as the honey flow came they would build up. Many bees would go out to find honey and never get back. I have watered in various ways. Some take the water out in the feed, but sometimes they fly away anyhow.

Mr. J. Scholl. I should like to hear Mr. Hill, of Ohio, regarding the doubling up of colonies in the spring.

Mr. Hill. It has always been my rule to keep them cool and not excite them in any way. I generally have no difficulty in raising weak colonies. The difficulty of which Mr. Muth speaks is on account of the location he is in. Some of those barrels in the yard were empty sugar barrels, and they go after them more than water.

Mr. Muth. When they commence to breed they immediately go for water.

Mr. Bull. Some go for water and some for food.

Mr. Muth. You see them around wells and hydrants, but none around honey barrels.

Mr. Reynolds. If I can save the life of one bee in May, it is worth one-half dozen in June. Many bees are lost in carrying water in the spring. I know this because I have opened the sack and found it.

Mr. Knowlton. Would it pay to increase food for the brood by the time clover comes?

Mr. Reynolds. I never get a colony too strong.

Mr. T. S. Bull. I want to get them strong early in the season, ready for the honey supply when it comes.

Mr. Johnson. You must have a good queen in the colony if you want to build easily and rapidly in the spring. If you have a lively young queen you get bees rapidly. The time you are feeding do you find any difference in flying out?

Mr. Muth. Yes, but not much. It depends on the condition of the weather whether we lose or not. If the spring is rough I want them to breed late, keeping them cool. When the season has commenced the cold weather is generally over. Then I open the entrance and put brood in the chamber, and as many combs as they can fill.

Mr. Broadbeck. I question whether we gain anything by breeding early in the spring, this requires room and it often reduces the bees to fly out sooner than otherwise and results in a loss.

Mr. Scholl. There has much been written about the spreading of broods. Very early in the season is not desirable, but must be done cautiously. As the season advances and the weather becomes warm, much is gained by spreading brood. We have to use our judgment as to how early it would be advisable. Suppose the weather continues cool up to the first of March and then turns warm, the queen begins laying and lays as much as a cluster of bees can keep warm; it will be twenty-one days before the bees will hatch. After the young bees hatch you can spread again, but if you spread before they hatch you injure the colony.

The election of officers for the ensuing year resulted as follows:

President, I. N. Cotton, Marion County.

Vice President, E. J. Howland, Marion County.

Secretary, F. L. Daugherty, Indianapolis.

Treasurer, Mrs. E. Stout, Indianapolis.

Mr. Cotton, on being conducted to the chair, spoke as follows:

Ladies and Gentlemen: Any one should feel proud to be called to preside over an assembly like this. I have been profitably instructed in attending these meetings. There are others here who possess more thought and intelligence than I, and if I consult my own feelings for serving as chairman of this Association I would have said no, but I will make no further remarks, and proceed to business.

Messrs. Mason, Howland and Scholl were appointed to wait on Governor Gray and invite him to address the convention during its session.

Messrs. Knowlton, Lane, Cox and the President of the Association were appointed a committee to wait on the State Board of Agriculture, and urge that special premiums be offered, and suitable accommodations for the exhibit of the bee industry at the State Fair.

DISCUSSION.

Mr. Knowlton. There is no department at the fair that attracts more attention than the honey. We have made creditable displays at our county fairs, and we could make an attractive show at the State Fair if we had ample accommodations.

Mr. Pope. Twelve years ago there was a splendid display of bees and honey at the fair, and attracted more attention than anything else on the ground.

Miss Eva Scholl, of Fayette County, read the following paper, on

WINTER PROTECTION.

There is perhaps nothing connected with the care of bees that has been the cause of so much anxiety, study and thought by beekeepers as wintering; and well it may, when official statistics show, that of 78,526 colonies in this State in the fall of 1882, 29,842, or more than one-third, were dead by April 1, 1883.

Nor have we fared any worse than a number of other States, in proportion to the number of colonies kept.

Such facts and figures show that with all our knowledge in other branches of business, successful wintering is an art yet to be learned by many beekeepers.

While there is uniformity in many things in the management of bees, when it comes to wintering, the plans and methods given are so many, and so various, as almost to distract the beginner. Uniform success will probably never be attained; nor is it possible for all to adopt the same plan.

Let us, then, first consider what a colony needs protection against. The food of the bee being liquid, nearly all is exhaled in the form of moisture. This passes off in moderate weather, but in cold it is condensed on the comb and sides of the hive in the form of frost.

To prevent the accumulation of frost near the cluster, it is necessary to provide means for warmth as well as dryness. With brood nest contracted, and a good absorbent above the bees, we have, perhaps, the best known way to secure this, something that will retain the natural warmth of the cluster and allow the moisture to escape.

The principal points emboided in the plan of wintering here given were suggested some twelve years ago by our esteemed friend, J. S. Hill, of Mt. Healthy, Ohio, and after ten years of uniform good success, we see no necessity of any essential change.

The hive we use is the ten-frame Langstroth, having double walls and bottom, with an open space between. This we consider of prime importance, not only as a winter hive, but also as a protection against heat in summer, as such hives need no shade, the air space around the brood-chamber preventing all danger of comb melting down. The extra bottom, with dead-air space, is a safeguard against moisture from the ground. The extra work required on such hives need not cost over seventy-five cents each, and does not add perceptibly to their size. As a ten-frame hive is too large for safe wintering, division boards are used. These are made of two pieces one-fourth inch lumber, with air space between. Division boards do not reach the bottom of the hive by one-half inch. Eight frames give sufficient space for the strongest colonies. When chaff division boards are used, there is room for only six or seven frames.

Every brood comb has two half-inch tin tubes through it for winter passages. Five or six sticks, half-inch square, are placed across the frames, and a woolen blanket lined with muslin is then put on. The blanket should fit so closely all around that not a bee can get above it. A stretcher made of burlap tacked on a light frame, that drops loosely into the upper box and rests on four short nails a half inch from the lower edge of the box, allows the box to be lifted off when filled with packing.

Our experience is that dry beech leaves make the best packing. The box should not be more than three-fourths full. Chaff is inclined to retain moisture.

A little ventilation over the packing is necessary to allow the escape of moisture constantly arising from the bees. This is secured by slightly raising the cover.

The entrance is tightly closed with a long block having a small notch about one-fourth inch square cut in the under side. Four inches above this entrance is an inch hole, so protected with a slide as to prevent a direct draft into the hive. Sleet and ice can not close this upper entrance

Straw or refuse hay is packed under the hive at the first approach of cold weather, and a portable fence four and one-half feet high is erected for a wind break.

It is very important that all preparations for winter be made early, before the weather becomes too cold for the bees to fly.

Bees are very sensitive to the first cold, and it is very injurious to disturb them by any manipulations or feeding after they have entered dormancy, or their natural period of rest.

Mr. Lane. If the instructions given in this essay are followed, our losses will be light in comparison with what they have been.

Mr. Knowlton. The article teaches just what we want.

The following paper, on

WHEN AND HOW OFTEN TO EXTRACT,

was read by Mr. T. S. Bull, of Porter County:

The last two seasons we left our honey on the hives until the close of the white honey harvest, tiering up from two to three stories high. The effect of that system of management was in harvesting honey of a most excellent quality. Most undoubtedly, to have honey of the best quality, it should remain in the hives until it is all sealed over or ripe. But for manufacturing purposes it does not require such fine flavor. One of the most extensive bakers of Chicago, who uses honey in large quantities, told me last fall that honey had to be old and strong; he said that he could not use new honey at all. I am well aware that we can not get so much honey by waiting as we can by extracting every three or four days. There is one point I wish to speak of here; it is this: If the bees were compelled to build new comb, or draw out foundation, it would not require so long a time to ripen the honey as it does when they have old comb to store the nectar in. In fact, if they have comb with deep cells and honey coming in fast they fill those deep cells so fast it takes it longer to ripen. I have been experimenting some the past season in ripening honey in a solar evaporator. Honey will not candy nearly so quick after it has been in the evaporator, at least some of mine has not candied yet (December 16, 1885). If we can extract the honey as fast as the bees bring it in, and ripen it with solar heat and have the honey of good quality or have it answer for manufacturing purposes, it will be one step in advance in apiculture.

In manufacturing we want to make a good grade all the time. You find one kind of honey is too thin and another too thick.

Mr. Bull. Those bakers who use it largely should not be ignorant. Dark honey seems to be most in demand for baking purposes. I hope they will use light after while.

Mr. Mason read the following paper on

"WHAT SHAPE, RACE AND COLOR ARE BEST AS HONEY GATHERERS?"

I have no apologies to offer, only on behalf of the Executive Committee in selecting me on the subject that belongs to a more experienced bee keeper than I. My first experience in bee keeping was with the native bee, commonly known as the black race of bees, until the past six or seven years, which have been with the Italians and hybrids, excepting one colony of Cyprian bees, which was soon discarded, being too irritable and cross to handle. My experience is too limited to report anything of their quality for honey gathering, but they were good on the sting.

In the quality and shape of a bee for honey gathering, I prefer a somewhat lengthy bee, with a round body and abdomen long and pointed, with an occasional black tip on abdomen, denoting hardiness of bees, and general texture of bee a bright leather color. I take this standpoint from a few colonies in my apiary the past two years, both as honey gatherers and hardiness, the queens being very prolific.

As to the race of the bee as a honey gatherer, my preference is first the Italian bee, for various reasons. First, their ability to visit various flowers for nectar that the common bees do not visit, and working days when the air is a little cool, while the commoner bees seldom leave their hives. The Italians are better home guards against robbers and the moth miller. However, I find that a hybrid strain of bees, wherein the mother bee is a pure Italian queen, mated by the German race of bees, is almost equal to the Italian in their quality as honey gatherers, and, as a rule, will gather honey from as many different flowers as the Italian bees. The general appearance of this bee to the novice would be taken for Italian, their disposition to stick to the comb being equal to that of a pure race of bees, and being almost equal for docility in handling. A hybrid bee, whose mother is of the common or inbred race of hybrid, is not so good a honey gatherer, not able to visit so many kinds of flowers for nectar, and being objectionable for being too irascible. While some say they find the surplus apartment more readily than the purer races, I am sure they will find us much quicker, too. I know there is some fault found to the Italians for being a little hard to get to work in the surplus apartment. I have never had any more trouble, all things being equal, than with other races of bees, and a good, prolific queen in a hive will keep the hive well filled with bees, and with the proper management at the right time.

Then they will readily seek for room, as comb builders. I have been able to get as straight combs from the Italians and as much of it as from other races of bees. I am not sure that the honey is quite so white. In the white clover and basswood flow of nectar the Italian and hybrid spoken of, working the red clover at the same time, gave the honey a richer color, the quality being most excellent. But from the same flowers I could not see any difference. I believe in progress. If there is anything in the improvement of stock in quality and profit, why not the bee for its quality as a honey gatherer, for its docility, for its vitality and hardiness, and lastly its beauty? As to other races of bees, not spoken of, I have no experience.

DISCUSSION.

Peter Rabb. Mr. Mason states that the hybrids were as good as the Italians. That is not my experience. They might be good enough as honey gatherers, but they are ill and difficult to handle. I prefer Italians to hybrids.

Mr. Mason. I spoke of the first cross of hybrids—a cross between the Italian queen and the German bee—as best to be handled; there is not much difference, but as honey gatherers they, perhaps, are better. This cross will work on red clover. I would as soon risk this first hybrid cross as the Italian.

Mr. Rabb. The Italian crossed with the black drones are fully as tame as the Italians. This is all I have. I got my hybrids from the black ones; some were crossed and some were not. Some breeds back to the black and some to the hybrids, and some breed to another race, and look like full bloods when they are not.

Mr. Mason. Is Mr. Rabb sure this cross was by a pure German bee? You take a cross from the hybrid to this pure mother and you get as bad a bee as you can get anywhere.

Mr. Rabb. I was sure, because I got a pure-blood queen.

Mr. Knowlton. I am aware of the fact that we have, strictly speaking, two races of bees. One of these is black and the other a yellow bee, and this, it is claimed, is the Italian. The Cyprians are only an aftergrowth. The different traits of character in bees are similar to those of men, and their traits as honey gatherers originate from other causes. The point for us to study is which of these characters we want. In Italy you get a large yellow-colored bee from one part of the country. We want to select from those that produce the best honey.

Mr. Leming. Is it not a fact that the yellow race produce black queens?

Mr. Knowlton. I can not say that I ever saw a black queen from that color, but I have seen them of a dark color.

Mr. Leming. Some three years ago I had an Italian queen and some others all hatched from the same mother. One of the queens was jet black. I kept that queen through the summer and reared several queens from her, and they all had the mark of the yellow queen. Some people doubt whether there is a black Italian queen, but I think there is.

Mr. Davis. My experience in hiving hybrids is, they will sting and are bad to handle. If one cross of the brown and black bee makes one as good as the Italian, why not a three-fourths nearly as good, and if three-fourths nearly as good why not have a black bee. I never have had a colony of hybrids as gentle as the Italian. Occasionally a hybrid is a fair honey gatherer, but generally they are not equal to the Italian. I look over my apiary each season, and select the gentlest honey gatherers, from which I get my queen. We can improve the quality just as we can other stock on the farm. If we want a hog that is a good grower and fattens early we must breed for that purpose. It is the same way with bees.

Mr. Bull. I think it best to use comb foundation. In the brood chamber and in sections it is preferable; it makes a more perfect comb in the brood chamber. We get all working comb. I am in the habit of manufacturing my own. I fill the frames full. I prefer heavy comb for the brood chamber and never use wire to support it.

Question. Which is the best queen, artificial or natural?

DISCUSSION.

Mr. Johnson. I have made some experiments and am unable to say which is best.

Mr. Stumph. I have tested both, and I have raised some good queens and some bad ones.

Mr. Mason. I have got as good queens by artificial swarming as I ever have under the natural process. I swarm my bees a little different artificially. I take the queen from the hive and move to a new locality, and let all the bees go to her, and I have succeeded in getting good queen cells and good developed queens.

Second Question. Is a reversible frame an improvement over stationary; if so, why?

DISCUSSION.

Mr. T. S. Bull. My experience with the reversible frame is not large. I think it will be a benefit to have a frame that can be reversed when we see proper. My old frames are not filled at the bottom. I wish they were. Sometimes there is so much honey above. Put the brood up above, and put the bees in the brood chamber and they will fill the frame full.

Mr. Cotton. The honey cells are built a little upward. What effect does that have?

Mr. Bull. I reversed some sections last year and had no difficulty at all.

Mr. Leming. Don't they destroy the eggs in the lower part?

Mr. Bull. I can not tell.

Third Question. Do queens in the cell receive their food by absorbtion or through the mouth?

Mr Knowlton. I think by absorption. The more jelly in the cell the better.

Mr. Smith. How do we know there is a surplus of jelly in the cell for effect on the queen?

Mr. Cotton. Might it not be by absorption in the earliest stage, and after by feed?

Mr. Knowlton. No, sir. Very early they lay in the jelly, but later it is different. They then turn their heads toward the feed. I think it is about the seventh day before they do this.

AFTERNOON SESSION.

Convention met, President Cotton in the chair.

Governor Gray spoke as follows:

Mr. Presideat, Ladies and Gentlemen of the Bee Keepers Association:

I am here in response to an invitation extended to me by your committee just before dinner. I thank you very sincerely for the invitation, and the compliment you have paid me to be present. I do not suppose it is expected to deliver an address because I freely acknowledge my ignorance, perhaps, of anything in bee culture or questions entering into it. I am fully conscious of the importance of your Association. I have no doubt meetings of this kind are not only interesting socially, but result in giving you much information you otherwise would be unable to obtain. It must be interesting to meet together and interchange views as to bee culture, the best mode of protection through the winter and which is the best race of bees for the production of honey. To ascertain this you must have knowledge regarding their culture. It is interesting and instructive, and I am glad to see not only in bee culture but other associations meet here for the purpose of intercharging views and comparing results, which are doing much good, not only in the furtherance of their business, but creating a social friendship among you. I am very pressingly engaged, having been to one or two similar conventions to-day, and have one or two yet to visit. There is a peculiar custom in Indiana for the Governor to show himself and say something before these meetings. A few years ago I made some preparation in order to show some knowledge of the subject, but I soon found it would not do, as it interfered materially with my official business relations. I feel highly complimented for the invitation to attend your association and make an acquaintance of that portion of my fellow citizens engaged in the industrial enterprise, which will tend to the wealth and business of the country. I do not suppose there are many here to-day who are exclusively engaged in bee culture, but a large portion are engaged in the tillage of the soil as well, the most honorable occupation to-day, as it has ever been, on earth, an occupation in which lies the wealth and prosperity of the country. There is no business, no enterprise I might say of the country which does not rest upon those engaged in the tillage of the soil. The industrial enterprises go with it. This is not flattery, it is simply one of the facts true with the people of the earth. Those who are engaged in the cultivation of the soil produce that upon which the human family must live and exist, occupying the highest and most honorable vocation that is followed in this world. I thank you, ladies and gentlemen, for the honor conferred upon me, and hope the meeting may be a success, not only in a social way, but to the bee keepers in the culture of the bee, and that you may have pleasant recollections of your meeting at the capital of Indiana, one of the grandest States in the Union. I thank you most cordially for your indulgence.

Mr. Scholl offered a resolution fixing the time for the next annual meeting not later than November 1. The resolution was amended so as to read, "Any time between the 1st and the 15th of November."

Fourth Question. What is the best size hive and frame?

Mr. Bull. I use large frames. They are 18 inches wide and 11 inches deep. The bees should have plenty of room.

Mr. Mason. What number do you use?

Mr. Bull. I use No. 9 frames, which I think are large enough.

The Secretary read the paper prepared by A. Menninger, of Tell City, as follows:

Mr. President and Gentlemen of the Convention:

It is useless to demonstrate that bee keeping depends on the amount of good pasture this little insect has. Small colonies soon double and triple on plenty of honey, and all the sciences and artful manipulations amount to nothing where bees have no access to good honey plants. Therefore it must be greeted with great satisfaction that the last Bee Keeper's Convention gave good attention and counsel to bee pasture. They should not stop here and work on in this direction, and so I here take the liberty to make a few suggestions, hoping that the Convention will take them for what they are worth.

1. A suitable person should be designated (perhaps one from the State Agricultural School) who is able to correctly name and describe all honey plants sent him by members and friends of bee keeping societies; also, to analyze them as to their respective value as honey-yielding plants.

2. The members of the State Bee Keepers' Association, and friends of bee keeping, should be requested to send to the above mentioned person all such honey plants which they deem worthy of notice, with all the characteristics they may notice on such plants, for examination.

3. A report of such work, as to value, characteristics, true name, etc.; also, place and person, where they can be had, should be spread before the next Bee Keepers' Convention, and, if possible, published in their annual report.

4. Several years ago the *Century Magazine* brought a glowing report of rich honey-yielding plants of California. Therefore, correspondence should be opened with the California Bee Keepers' Association, for the procuring of seeds and roots of such honey plants as abound there, for dissemination among bee keepers of this State.

5. And as the greatest difficulty in bee keeping is to have summer and fall pasture, and as nothing equals the common heather for such, and as heather will grow and thrive where no other plant will live, therefore, request should be made to the Commissioner of Agriculture at Washington, to import and distribute among bee keepers' societies, plants and seeds of this, the best honey plant for summer and fall.

Before closing allow me to remark that the yellow lupine and the esparseta are two excellent forage and fertilizing plants, affording to the bees a very rich pasture, especially esparseta (a kind of perennial clover) has, in the southern part of Germany, done much toward restoring worn out lands and paying well the same time for its cultivation.

Sixth Question. Why do bees store honey?

Mr. Muth. Why don't we spend all we earn? Bees store honey because of their sense of industry and saving, and for protection. Honey is their food to live on, and they will store as long as they can find anything to make honey of.

Mr. Cotton. I think it is their instinct.

Mr. Scholl. This instinct is not only given to bees, but to animals. Squirrels provide in this way by storing away nuts for the winter.

Seventh Question. Are not the small black bees most profitable for Indiana?

Mr. Muth. The black bee is very industrious, and if we have profit in view only, it can do as much, but it is more troublesome to handle than the Italian.

Eighth Question. Where can Alsike clover be procured, and at what price?

Mr. Johnson. I think it requires about one-half the amount to the acre, as compared with red clover. It perhaps can be found at most any of the seed stores in this city.

Mr. Daugherty. The seed are smaller than the common clover. It would be safe to sow one-half the amount to the acre.

Question. When do you sow it?

Answer. About the time you sow red clover.

Mr. Mason. I sow it quite thick.

Mr. Rabb. The first crop produces the seed. If you wish to sow it on thin land it is best to apply some manure first, as poor land will not produce a good crop.

Mr. Johnson. Does the second crop yield honey?

Mr. Mason. Yes, sir, but it don't produce quite so much as the first and not quite so rich.

Mr. Davis. There is a peculiar kind of clover on my farm which blooms about the same time as the apple. It grows like the white clover, running on the ground and taking root at every joint. It is as coarse a plant as the red clover. I have a small patch in my garden and I hope to tell you next year the result. If it can be cultivated it will no doubt make good bee pasture, but is of no account for hay, because of its running on the ground. The blossom is white and the leaf like the common red clover, but larger.

Mr. Bull. Does catnip grow here? It is as good a honey-producing plant as we have. It yields honey all through the summer until fall.

Mr. Muth. Catnip makes nice honey. This year locust honey was good. Poplar honey is also fine. If locust was as sure as clover it would be a favorite article.

Mr. Mason. Would it pay to plant groves of locust for honey?

Mr. Muth. It would pay, perhaps; but in general the clover bloom is the main dependence we have. We have a locust crop only once in a while.

Mr. Rabb. The locust comes after apple bloom and before white clover. The timber is also valuable. I think it would be profitable to plant.

Mr. Howland. I have a grove planted forty years ago. I do not recollect any year in the forty that the bees did not work on the locust. It is a profitable timber to plant for posts; it is among the best we have, and, perhaps, the *best* produced in this country for that purpose. I have some trees set thirty-three years ago, and are now twenty inches through.

Mr. I. N. Cotton. I have a locust grove of seventy-five trees set forty years ago. For the last eight years the bees have gathered much honey from these locust trees. It affords a supply after the apple bloom.

Mr. Mason. Do they spread much?

Mr. Howland. The spread is not bad. I have some set along my fence and they have not given me any trouble yet; but you must not plow near them and keep the sprouts cut down.

Mr. Bull. I have seen them sprout across the road and come up. I must add my testimony to their good quality for fence posts.

Mr. Howland. The borer has sometimes worked on the trees, but does not until the tree gets post size. I am not certain whether an acre could be more profitably planted than with locust. Here in Indiana we pay from ten to thirty cents for posts. In twenty-five years a man can produce as many dollars off an acre of ground in black locust as he can in corn.

Mr. Knowlton. Will it pay to cultivate catalpa?

Mr. Muth. I have my doubts.

The Convention adjourned *sine die.*

INDIANA CANE GROWERS' CONVENTION.

The meeting was called to order at 10 A. M., Dec. 29, 1885, with Dr. A. Furnas, of Danville, Ind., in the chair.

President Furnas gave a lengthy outline of what should and what would come before the convention, inviting free discussion thereon.

Mr. Densmore, of Minnesota, gave a very interesting statement of the sorghum interests in Minnesota. This year's crop was large; was selling readily and at good prices.

Mr. Leitzman, of Indiana, explained his use of cold water in the pipes of his finishing-pan, cooling the syrup and preventing its burning on the pipes when the pan is nearly empty.

Mr. Anderson, Indiana. Was it of any advantage?

Mr. Leitzman. It was of decided advantage to me.

Mr. Deming. I have had no experience with iron pipes in finishing-pan; syrup did not burn on copper.

President. We were troubled severely from this cause.

Mr. Satterthwaite, Indiana. My pan is a continuous flow; pipes are never bared so it could burn; much scale formed on pipes. Cane from bottom lands is the most troublesome.

Mr. Anderson. To remove scales the past season has cost me in time of men and time lost fully one hundred dollars.

Mr. Deming. Lime in pipes will not color syrup; may be caused by long application of heat, as pipes covered with scale transmit heat but slowly. To remove scale, lightly cover coil with water, add one pint to one quart of sulphuric acid, boil five minutes, sweep with a broom and wash clean.

Mr. Coffin, Indiana. For three years I have used acid and water to remove scales from iron pipes in a wooden evaporator not lined with metal.

President. Cleaned my pipes twice each day. Scales became extremely hard.

The convention adjourned.

The meeting was called to order again at 2 P. M., with E. W. Deming acting secretary. The president delivered the following address:

Gentlemen of the Sorghum Growers' Convention:

We have met for the fourth time to take each other by the hand and talk over our varied experience, compare notes and foot up accounts.

I trust that every member of this association has been diligent in his investigation of the different departments of his field of labor, which includes everything in the smallest detail, from the selecting of the seed, making choice of and preparing the ground, the germination of the seed and growth of the tender plant, careful and economic cultivation of the growing crop, harvesting the same, delivery to the mill, rolling the cane, the delivery of the bagasse, the handling and manipulation of the green juice, defecation, evaporation, finishing, cooling, barreling, and finally marketing the product.

I will not forestall discussion by an effort to elucidate the different phases of the cane growers' work. This I shall take pleasure in assisting you to develop as the convention progresses with its labors.

Perhaps, however, it will be proper for me to make a few suggestions in reference to the general character of our work, as well as the probability of demand for our goods, while I may call your attention to some of the minor points of our work that are too often overlooked.

The association of ideas in the years that have past in this comparatively new industry is anything but refreshing, inspiring or cheering. They carry us back to the days of wooden mills, the battery of kettles in the ground, or, worse still, over logs, with the accompanying ashes, smoke and other filth, and all these in the open air to take rain or sunshine. The product of those times would always suffer in comparison with the Southern syrups, and finally the very mention of sorghum was a stench and reproach to all men. This grew into a deep-rooted prejudice which can only be worked out by producing an article that is equal to the best products of the South; one that is not only palatable and healthy, but a positive luxury. That this can be done has been demonstrated times out of mind, and will still be improved upon.

So long as Louisiana only produces one-tenth of the sugar consumed in the United States, no unpleasant rivalry can possibly occur between the North and South in reference to this industry. The truth of the matter is, so far as sugar-making is concerned, we do not yet weigh a feather in the balance. However, we can make sugar, and make it with mathematical certainty, but with our machinery heretofore in use, and the low per cent. of sucrose in the Northern cane when compared with the Southern, we can not enter the list in competition with the commercial sugars now on the market. That this will always be the case I do not pretend to say, but I will say this, that even in my day, I am ready for the announcement to the world of the possibility of the success of sugar-making from sorghum. The principal trouble with me is to prevent syrup from crystalizing, for a barrel of malada is not desired by our dealers, while the objection does not amount to so much among our country customers.

That we have made, and can make, syrup that will compete successfully in the markets, is now certainly the fact. First, we have a soil well adapted to the growth of sorghum even far north of this. Second, our seasons, though not so long as farther south, seem amply fitted to develop the syrup-making qualities in the juice, and a third, and prominent item in our favor is the saving of all the cost and risk of transportation. If nothing more can be done than make a good article of wholesome syrup, it will be ample remuneration for our trouble and expense incurred up to this point. While we have accomplished much—enough to be sensibly felt in the market in competition with the Southern market—we must not forget that we have not yet learned to always make a uniform, desirable article. This we must do before we lay claim to perfection, and yet it may be more difficult to accomplish than in the Southern cane. However, I have faith in the push, science and energy, as well as enterprise of our people. I believe all the hindering obstacles to success will finally melt away like frost before the warming sun.

In reference to the new methods described of extracting the saccharine matter from the cane by diffusion, and purification by carbonatation, I, of course, can not speak from experience. I believe I know what thorough milling with a good three-roll mill can do. This fall we set our mill so close that it most effectually disintegrated the cane. It adhered to the top roll so as to make it necessary to place a scraper on it to prevent it being drawn over and reground, yet, with all this effort to extract the juice, it would appear that forty per cent. of it was lost. This is a waste that I desire very much to overcome. Diffusion promises the remedy. If these promises are to be fulfilled, then the days of milling are doomed and, sooner or later, must give way to the slicer and diffusion cell.

Committee on Election reported as follows:

President, A. Furnas, Danville, Ind.; Vice President, E. W. Deming, West Point, Ind.; Secretary, A. S. Chapman, Madison, Ind.; Treasurer, W. T. Leitzman, Clayton, Ind.

The Secretary was instructed to cast the vote of the Association for the above officers.

Mr. Anderson, of Indiana, presented an address for the consideration of the Hon. Commissioner of Agriculture:

The Cane Growers of Indiana in convention recognize the importance of the experiments in diffusion and carbonatation conducted under the direction of its able chemist at Ottawa, Kansas, the past season, and congratulate the Hon. Commissioner, the country, and the Cane Growers, upon the satisfactory results of these experiments.

We would respectfully request that the Department of Agriculture continue these experiments. We also respectfully request the Department of Agriculture to bear in mind the obvious fact that the medium and small factories have, in the aggregate, more capital invested, and yield a product of greater value than the large factories, and that their success will hasten the development and greatly increase the importance of the Northern cane industry.

If the evaporation of fruit and the successful working of creameries were only possible on a large scale, these industries would never have obtained their present importance. There is room for all. The rapid and general prosperity of the Northern cane industry depends as much upon the success of the medium and small as the large factories.

We respectfully urge the Department of Agriculture to test methods, apparatus and processes especially adapted to the use of medium and small factories, securing a greater extraction, a more thorough clarification and a more economical concentration of the juice; developing standard machinery and standard processes, thereby insuring more uniform product. We tender our thanks to the Commissioner of

Agriculture and to the Department Chemist for the assistance and encouragement they have given this new and struggling industry, and we believe that the manufacture of sugar from Northern grown cane will develop steadily and surely, as has the manufacture of beet sugar in Europe, and will repay governmental aid a thousand fold.

The Secretary was instructed to forward a copy of the above to Commissioner Colman.

President. What will prevent my syrup granulating so that the grocer can handle it?

Mr. McQuinston, Ohio. I use alum.

Mr. Leitzman. Tartaric, acetic or most other acids will prevent granulating.

President. I allow cut cane to lie in the field three or four days, or remain in the pile a few days to prevent granulation.

Prof. Dobson. The use of acids and alum is very objectionable. Use sugar of milk; it tastes like milk, is harmless and healthy. One-half ounce to the gallon.

President. There is less granulation and less impurities in cane that remains cut in the field a few days. It causes a partial inversion of the sugar while impurities are set in the rind.

Mr. Raab. Cane cut laying in the sun three days or in a pile one week granulates badly with me.

Mr. Horton. Sugars in syrup are indications of its good quality; seek seed from cane giving the most sugar; such syrup will never sour. I object to the use of acids. A dealer complained that he could not draw my syrup; I told him to tap the other end of the barrel and then invert it; this change nearly emptied the barrel.

Mr. Pope. The best honey granulates, and so should sorghum.

Mr. Leitzman. Acid does not affect sweetening power, but prevents granulating. Dealers refuse to buy unless it can be kept in a liquid state, and if sold to local trade must not granulate.

Mr. McQuinston, Ohio. Dealers want thinner goods than patrons. We must satisfy the demand, whatever it may be.

Mr. Densmore, Minnesota. We should make sugar or syrup, depending upon what pays best. Heat applied to a large body of juice in clarifying will produce syrup and no sugar. A high heat applied and a shallow body of juice quickly clarified will yield sugar in paying quantities.

President. This season I have used but few chemicals and little lime, and produced a superior syrup.

Mr. Coffin. Use a cheap filter and settling boxes. Use no lime or bi-sulphate of lime.

Mr. Clelland. Tried F. L. Stewart's process; precipitated sediment, leaving juice clear as water; completely neutralized acid with lime, then restored color to litmus paper by use of sulphuric acid; in two days it was nearly solid sugar. A large waste in precipitation that would not separate or be filtered. The syrup was dark. Burn sulphur in a barrel into which passes a pump of greater capacity than the inflowing juice, pump fumes and sulphur united through a pipe, then use cream of lime; use both straw and charcoal filters, the latter gives the best results. Can use a cone charcoal filter two days. A covered evaporator drives out the scum.

Mr. Anderson. I believe much is left in syrup. Use lime constantly and fatten hogs on skimmings. I work both with and without chemicals, and convinced a neighbor on his own apparatus of the benefits of the use of chemicals

Mr. Clelland. With the use of lime I get one-third more scum than without and possibly not so much syrup.

Mr. Nicholson. Did not use much lime; best results without the use of lime or bi-sulphate. Good ripe cane had but little green scum; immature cane would give green scum until quite finished. In the finished we turned on a full head of steam, and when the contents were likely to run over then we turned off the steam suddenly and dipped up and poured back into the pan; its contact with the air I believe to have greatly assisted in removing impurities. Believe no time was lost in blowing up, as the high head of steam, even if of short duration, did as much good as constant evaporating with low pressure of steam.

Mr. Anderson. I understand the use of chemicals and make the best of syrup. I believe chemicals are often improperly used. One must watch, personally, his clarification to make good syrup.

Mr. Clelland. I believe Anderson is correct.

Mr. Leitzman. A fine flavored syrup was made by taking some syrup, neutralized perfectly sweet, and adding the water in which a lemon had been steeped. One lemon will flavor twenty-five gallons.

Mr Anderson. Have used chemicals for twenty years in open pan.

Mr. Mendenhall. Used lime and made a dark syrup; customers returned asking for more of that dark, good syrup. Shall I apply lime to hot or cold juice? Is a settling tank necessary after using lime? Is there not much sediment?

Mr. Deming. As a general thing settling tanks are of benefit. If their use was more general I believe the quality of syrup would be improved.

Mr. Anderson. Don't favor settling tanks. In clarifying never allow the heat to break the scum. After steam is shut off allow a few minutes for settling, then draw through a hole in the bottom of the tank, over which is placed a flannel cloth; use no swing pipe; five to thirty minutes for settling; one hour and ten minutes to clarify a batch. Wash the clarifier after every batch. You can easily tell when juice is well settled, and all the good juice has passed out.

President. The principle is good. A separate tank loses much heat.

Mr. Deming. Are not settling tanks with coil more expensive than a plain box

Mr. Anderson Pipes are cheap and need not cost over three or four dollars for one pan.

Mr. Nichols. How do you work small batches with this pan?

Mr. Anderson. Measure each man's juice, then mix them, give a portion according to measure and saccharometer test.

President. Discussions of this afternoon have been very good and instructive. Members having questions they wish answered will please send them to the desk on a slip of paper. The use of the settling tank is very important. Dr. Wiley, in his letter read to you, says: "Heat is of more value than lime or chemicals to clarify the juice; that you can do better without lime if little or no acid is in the juice."

A. S. Chapman read a paper on

"SORGHUM, A POTENT FACTOR IN THE FARMER'S FUTURE CROP."

Mr. Anderson. I think cane seed of little value for feeding stock. I can not get a good crop of seed and a good crop of syrup from the same stalk. The grain of oats, wheat and corn ripen at the expense of the strength in the stalk, as does cane seed. My best syrup is made from unripe cane. It decreases in quality as the seeds harden. In the use of ensilage, does not the sugar in the cane undergo fermentation, converting it into alcohol? Is alcohol nutritious as food?

Mr. McQuinston, Ohio. I prefer ripe cane. Seed just hard shows 7 B, in two weeks 9 B, when I get twenty-five to thirty-five gallons more to the acre. Ripe cane works better in every respect.

President. A friend in Tennessee uses sorghum extensively as a forage plant. Experienced growers say one acre of sorghum is worth three acres of corn.

Mr. Chapman. During the past few years I have written letters to parties in every part of the Union where cane grows. Many reply from the Southern States "it is mainly used as fodder," and ask how syrup can be made from it. From observation I believe the best syrup can be made from ripe cane.

Mr. Mendenhall. Cane ripe and yellow makes the best syrup. Late cane never gets too ripe. Amber this year did poorly until quite late in the season. Early cutting very poor.

Mr. McQuinston. In thirty-five years' work I never had cane too ripe unless it became red in the heart.

President. Does sorghum exhaust the soil as bad as corn?

Mr. Porter. A piece of my land has been in sorghum fifteen consecutive years, the yield increasing every year.

Mr. Anderson. One piece of land twenty-four consecutive years in cane—no manure—yielding larger crops than ever. A friend of mine raises cane to bring his land up, and claims it is as good as clover.

Mr. Clelland. Wheat and oats do better after cane than after corn. Have traced cane roots to a depth of three feet.

Mr. Chapman. A Mr. Porter says: "Raising cane on poor, wet land for five years greatly improved it for all crops."

Mr. Leitzman. In tilling through a sorghum patch I traced roots down four feet. It greatly improves the soil; like clover, the roots penetrate the subsoil, bringing up soluble substances otherwise not obtained.

Mr. Raab. Have traced corn roots to a depth of six or seven feet, and believe cane goes as deep.

President. The action of cane roots makes it a good fertilizer. An old horicultural friend residing at Alton, Ill., in digging a tunnel found clover roots that had penetrated the soil to a depth of twelve feet.

Mr. Mendenhall. Farmers, and especially our patrons, need information in regard to soil, cultivation, the best cane and fertilizers.

Mr. Porter. My cane is raised same as corn; planted ten or twelve seeds in a hill, rows three feet apart; if a hill is missing can easily transplant from a full hill. Do not use too much manure, or you will get very bad syrup—so bad you can not induce hogs to eat it. Cane requires no fertilizer; good land and good cultivation are all that is needed.

Mr. Anderson. If soil is worn, apply manure; plant corn one year, then it is in good condition for cane.

Mr. McQuinston. Have used phosphate of lime two seasons with great benefit. It starts quick, grows faster and increases the yield fully twenty-five per cent. One tablespoonful to the hill, spread a little. Take a barrel and place stable manure in it and fill it with water; then let it stand a short time and use the water, one pint to the hill.

Mr. Raab. A moderate dressing of manure can be applied in the fall and winter, and do no damage to the syrup.

President. Any land that will raise an average crop of corn does not need fertilizer for cane.

Mr. Deming. Have used two car-loads of phosphate of lime in two seasons. It assists the cane wonderfully to get an early start, and greatly reduces the cost of cultivation. Its effect, or rather its strength, is very soon exhausted.

Mr. Pope. Fertilizers greatly assist seed in germinating.

Persident. Who soaks seed?

Mr. Clelland. I soak seed until it swells some, then mix landplaster with it and plant it with a horse planter.

Mr. Pope. I soak and sprout seed, but it will die if placed in dry soil in dry weather.

President. I soak seed. It gets and keeps a good start.

Mr. Carter. I scald seed, plant with a corn drill after mixing with ashes and lime to dry it. It comes up in less than a week.

Mr. Mendenhall. If the glume or envelope enclosing the seed is removed the seed will sprout in three days: if not removed it will require seven. By striking the tufts on a board the seed can be removed nearly free from the glume.

The Treasurer's report was read and accepted.

Balance from report January 21, 1885	$10 25
Membership fees	10 00
Total	$20 25

PAID OUT.

To Janitor	$1 00
Stenographer	10 00
Printing and postage	3 75
Total	$14 75
Balance on hand	5 50

W. T. LEITZMAN, *Treasurer.*

Mr. Deming made a motion to accept, in competition for prizes, any sample of sufficient quantity to determine its quality.

The motion carried.

Mr. Pope. What is the best variety of cane?

Mr. Porter. Honduras and Early Orange. Honduras is late, works easy, and makes nice syrup. I clean my pans with sulphuric acid and water with but little trouble. One ounce of the acid to a Cook pan. If cane is grown on clay land, merely wash the pan without acid. Bottom land cane makes a foul pan. From six and one-half tons of Honduras I made eighty gallons of syrup.

Mr. McQuinston. Early Orange and Nonesuch suit us best. Land is lime stone soil. Can make from twenty-five to forty gallons more per day from Orange than from Honduras. From four loads of well-ripened Honduras cane, testing 9 B, I made one hundred and five gallons. Honduras syrup is slightly red in color.

Mr. Mendenhall. I prefer Orange. The Honduras makes nice syrup and works easy, but Orange produces nearly twice as much syrup.

Mr. Fields. Honduras has our preference from long experience. Orange tests 6 B, Honduras 8 B. One piece of Honduras, four acres, estimated at a yield of twenty-five tons per acre, twelve to fifteen feet high, hills fourteen to eighteen inches apart. Land was an old feeding lot, and was very rich. Our third choice is Amber.

The Committee on Resolutions reported as follows:

WHEREAS, The Cane Growers of Indiana assembled, recognizing the critical condition of the sorghum industry in our midst, and the importance of its successful outcome to our great body of farmers, and, in fact, to the country at large, and believing sorghum to be the plant that, at no distant day, will largely supply the world's commerce with its sugar, and further recognizing the lack of knowledge of its culture, manufacture, machinery, etc., now being diffused, and the importance of our State and National Government using their legislative powers in the diffusion of such knowledge, and in testing and bringing before the interested public suitable machinery and suitable methods tending to place the industry in the position which the nature of things show that it will eventually occupy, and believing it to be the duty of our law makers to hasten that coming; therefore, be it

Resolved, That this body, in convention assembled, respectfully request that the Department of Agriculture do all in their power to have the United States Congress pass suitable appropriations for furthering the experiments in this line; and we would further request that these experiments be conducted in the interest of the smaller manufacturers as well as the large, believing the industry is now in a situation requiring governmental aid. And be it further

Resolved, That each member of this body consider himself as a committee of one to use his franchise privileges in inducing our legislators, both State and National, to use their influence in furthering the interests of the sorghum industry, and we request our honorable President to bring our needs before the members of the Legislature, requesting their attention thereto.

A. S. CHAPMAN,
W. L. ANDERSON.

COMMITTEE ON SAMPLES.

Your committee find a large number of fine samples of sorghum syrup entered in competition for the prizes offered by the Association for the two best samples.

First prize, $3 in cash and one of Chapman & Co's., Madison, Ind., perpetual evaporators, was awarded to W. F. Leitzman, of Clayton, Ind.

Second prize, $2 cash and a year's subscription to the *Guide*, was awarded to A. P. Clelland, of Birmingham, Ind.

Owing to superior excellence of most samples your committee had no easy task in determining what samples were of most merit. The sugar displayed by T. McQuinston, of Morning Sun, Ohio, was very fine.

E. W. Deming,
A. H. Carter,
E. S. Pope.

Mr. Porter. How were these prize samples of syrup made?

Mr. Leitzman. Juice passing over a wire screen enters a juice box. Used bisulphate of lime, one quart to 100 gallons of juice, in the defecator with the aid of litmus paper. Used lime until litmus was turned purple and did not neutralize the acid. Defecator has a cooling surface to which all scum is forced by heat at the opposite end. The juice now enters a 150 gallon settling tank. In a Stubbs pan I evaporate the juice to 20 or 25 B, when it is again allowed to settle and then finished by steam, blowing it up several times. This pan is four feet eight inches long, 22 inches wide and 22 inches deep, lined with No. 22 galvanized iron and fitted with one inch iron pipe.

Mr. Anderson. Does scum roll back on incline sloping side, passing into the juice?

Mr. Leitzman. No, sir.

Mr. Clelland. I use one pint of cream of lime to 50 gallons of juice; use litmus paper; filter the juice while hot. I use a fire pan nearly covered.

Mr. Nichols. What degree of heat is required for good thick syrup?

Mr. Clelland. 225 to 228.

Mr. Jackson. Do you test the thermometer in open pan?

Mr. Clelland. Used one four years for finished syrup; it runs from 223 to 235. Syrup is always too thick if I work without a thermometer.

Mr. Satterthwaite. With me they vary greatly, amber showing 230 while Orange syrup, same density, showed 225. One lot of cane made to order for handling with a knife and fork showed 233.

Mr. Anderson. Is the saccharometer as reliable for the uses to which it is put as the thermometer?

Mr. Deming. Cane grown on bottom land is rich in organic matter, and yields a juice with an undue portion of gum and invested sugar, and invariably finishes at a lower temperature than juice from cane grown on upland, which contains less impurities and more true sugar. The saccharometer is affected by the solids in the juice, gravel, sand or dust having its effect. While it is more reliable than the thermometer it can not be depended upon for determining the true contents of cane sugar, as many suppose.

Mr. Nicholson. My father, an old worker, says, "boil until it strings." This is not reliable, as Imphee will not string.

Mr. McQuinston. You must judge by appearances. Starch and gum will not show as accurate as a sugar solution with the use of a thermometer. If a little butter is added you can not burn a batch; it will not run over or bubble up as without the butter, and it gives the syrup a good flavor.

Mr. Fields. My pan often boils up and over the sides. We rinse our skimmers often in a barrel of water, and at night, when the evaporator is empty, we pour in this water; it sours and cuts all the scales loose from the pan. In the morning the pan is nice and bright. I can also use this water for making vinegar.

Mr. Kingsbury, of the *Indiana Farmer*, asked for information in regard to the business. Is it increasing or not?

Mr. Leitzman. I made 4,000 gallons; all sold. Price, wholesale, 40 cents; retail, 50 cents.

Mr. Fields. Made 12,000 gallons; all sold. Price, 40 cents wholesale.

Mr. Rabb. Made 1,800 gallons, which sold at 50 cents.

Mr. Mendenhall. Made 1,000 gallons; all sold. Price, wholesale, 40 cents; retail, 50 cents.

Mr. McQuiston. Made 5,414 gallons and sold about half at 40 and 50 cents.

Mr. Clelland. Made 2,423 gallons, and sold most of it for 40 and 50 cents.

Mr. Satterthwaite. Made 3,175 gallons and sold all at 40 and 50 cents.

Mr. Coffin. Made 4,700 gallons, sold it all at 50 cents.

Mr. Lisk. Made 2,000 gallons and sold all at 40 and 50 cents.

Mr. Carter. Made 700 gallons; all sold at 40 and 45 cents.

Mr. Hollingsworth. I made 800 gallons and sold it all at 40 and 50 cents.

Mr. Horton. I made 1,600 gallons and disposed of all at 40 and 50 cents.

Mr. Anderson. Made 5,000 gallons; sold it at 40 and 50 cents.

Lafayette Sugar Co. made 3,400 gallons, which was destroyed by fire.

Mr. Furnas. I made 2,200 gallons and sold it at 40 and 50 cents.

Mr. Porter. I think we should raise only early cane and let patrons raise the late cane for the main crop.

Then followed a discussion:

"IS SORGHUM A SYRUP OR MOLASSES?"

Mr. Leitzman said syrup was a juice from which no sugar was taken. Molasses was of a dark color and sugar was removed.

Mr. Densmore, of Minnesota, wished to know if sorghum without lime should not be called molasses, and clarified sorghum juice be known as syrup?

Mr. Chapman, of Indiana, thought Mr. Denton, of Kansas, had fully answered that question.

Governor Gray briefly addressed the meeting. He was pleased to answer the call of the committee to be present and address the convention. He was hard pressed with business, but wished to come and greet the members of this important organization. Improved methods of cultivating cane have greatly cheapened the production and greatly cheapened sweets, resulting in great benefit to the laboring man. The object of this meeting can not but be for mutual good. I never knew farmers to meet but for some good work. Three-fourths of our people are engaged in agriculture, and their success or failure affects every other calling in which man is engaged. I am happy to have met you and hope the meeting may be of great benefit. I am obliged to you for the invitation to be present.

Mr. Horton explained the working of his fire evaporator from small model. He strongly favors filters. Uses a cooler in which syrup drops from one shelf to another.

The President thought the outlook for this industry was never better. Patrons came further and did more to get good syrup this year than ever before; some patrons came fourteen miles to mill. Has sold his mill. ' Will look around next season and visit every one at the factories or their homes.

Mr. Nicholson. Should lower roll on feed side of the mill be smooth or creased?

President. Some claim grooves give more grinding surface than the same roll smooth.

Mr. McQuinston. I had feed roll to my mill made smooth. Scraper troubled me some with creased rolls. No trouble now with scraper or in feeding mill.

Mr. President. Works should be property arranged, and require but little hand labor with economic arrangements for work. In the roof of my factory I could open a sash allowing heat and steam to pass off readily, making work pleasant in warm weather; had 12-foot swinging doors on the side for light and ventilation. Kept everything neat for the inspection of ladies.

A motion made and carried to bring wives and daughters to the next meeting.

Mr. Chapman offered an amendment to the motion, which also passed, to make such visiting ladies honorary members.

Mr. Pope. The seed question is still unsettled.

Mr. Carter preferred Amber.

Mr. Jackson preferred Orange and Nonesuch.

Mr. Nicholson preferred Amber and Orange.

Mr. Rabb preferred Amber and Orange.

Mr. Engle preferred Amber and Orange.

Mr. Horton preferred Amber and Honey Cane.

Mr. Mendenhall preferred Amber and Orange.

Mr. Leitzman preferred Amber and Orange.

Mr. Clelland preferred Amber; thought Orange uncertain.

Mr. Coffin preferred Amber and Honduras.

Mr. Satterthwaite preferred Amber and Orange.

Mr. Lisk preferred Amber and Orange.

Mr. President. I have not made an average of 100 gallons of syrup per acre of the Amber cane. From the patent office, a few years ago, I got a bunch of Links Hybrid, badly mixed. Some neighbors like it; it works easily, producing about 512 gallons per acre.

Mr. Chapman. I am much pleased with the success of this meeting, and hope the next one will be larger. I favor county organizations with delegates to the State meeting, as a means of increasing knowledge and interest of this important industry. Bring with you your neighbor workers and your wives and daughters.

Mr. Engle. County meetings will strengthen the State meetings. There are very many workers that do not know of these meetings.

Mr. Chapman. If the members will send me the names of all workers in their vicinity I will send them a paper and aid all in my power to bring them to our meetings. I will offer and place at the disposition of this society, one forty dollar automatic self-skimming evaporator, of my make, to be offered as a premium for the best sample of syrup at our next meeting.

After much discussion the following were offered as premiums:

First, premium of three dollars for the first, and two dollars for the second best samples of one pint of sorghum syrup made with chemicals.

The same premiums are offered for syrup made without chemicals, making five premiums in all.

Convention adjourned *sine die.*

INDEX.

A.

Page.

- Appropriation, New Orleans exhibit, 17
- Acts for the Encouragement of Agriculture, 18
- Appropriation for premiums, 19
- Advertising for State Fair, 21
- Address by the President, 30
  - Mrs. L. May Wheeler, 42, 173
  - Prof. F. M. Webster, 53, 180
  - J. N. Davidson, 55, 217
  - Col. J. B. Maynard, 58, 226
  - J. M. Osborn, 58, 252
  - J. Q. A. Sieg, 58, 223
  - Prof. J. L. Campbell, 59, 237
  - John Miller, 60, 263
  - Prof. J. H. Smart, 60
  - Prof. Robert B. Warder, 163
- Agricultural chemistry, notes on, 163
- Agriculture as a source of prosperity, 226
- Address by Prof. Maurice Thompson, 247
- Agriculture as a learned profession, 268
  - Objects and needs of a farmer, 268
  - Wealth and extravagance, 269
  - Mental activity, 269
  - Importance of education, 269
  - Scientific education, 270
  - Agricultural schools, 270
  - Common schools, 272
  - Home education, 273
  - Country clubs, 273
  - Education, present state of, 273
  - Academic education, 274
  - Course of study, 274
  - Home work, 275
  - Schools for the masses, 276
  - Storrs' agricultural school, 276
  - State aid, 277
- Allen County, report of, 279
- Acton District, report of, 338
- Associations, industrial, list of, 7

B.

Page.

Bonds, cancellation of 25
Birds of Indiana 247
Bartholomew County, reports of 279, 280
Blackford County, report of 281
Boone County, report of 281
Bridgeton Union, report of 339
Bee Keepers—Proceedings of 504
    Secretary and Treasurer's reports 504
    President's address 505
    Educational advantages 508
    Bee pasture 509
    Extracted and comb honey 511
    Dysentery 513
    Spring management 519
    Election of officers 521
    Winter protection 522
    Extracting honey 523
    Best kinds of bees 524
    Best queens 526
    Best kinds of frames 526
    Governor's address 527
    Paper by A. Menninger 528

C.

Commissioner of Agriculture, endorsement 18
Coops, purchase of 18
Committeemen, assignment 21
Committeemen 23, 24
Complimentary tickets 23
Committee on Credentials 29
Committee on Grains 29
Committee on Finance, report of 53
    Rules and Regulations, report of 53
    Premium List, report of 53
    Awards, grain, report of 53
    The Presidents' Addresses, report of 53
Change of fair grounds 54, 55
Communication from Percheron horse breeders 56
Committee on Fair Grounds, report of 57
Campbell, Prof. J. L., address of 59, 237
Committee on Arrangements 62
Comparison of various classes 252
    Our farmers 262
Cass County, report of 282
Clark County, report of 283
Clinton County, report of 285
Cane Growers—Proceedings of 531
    President's address 531
    Election of officers 533
    Sorghum crop 536
    Treasurer's report 537
    Resolution 538
    Prizes 539

D.

	Page.
Dog tax	20
Department superintendents	20
Disposal of boilers, etc.	21
Display of grain, wool, etc	23, 24
Delegates to National Association.	24
Delegates, list of, annual meeting 1886	27, 28
Davidson, J. N., address of	55, 217
Delegates, circuit convention	25, 62
Drainage	237
Table land marshes	240
Uplands	241
Elevated valley marshes.	242
Improvement.	243
Low lands	244
Dryer, Charles R., address of	286
Daviess County, report of	287
Delaware County, report of	288
Decatur County, report of	289

E.

Election of officers, 1885	17
Encouragement of agriculture, acts of	18
Exhibitors' tickets	23, 46
Election of members.	57
Election of officers, 1886	62
Exhibits, special merits of	100–163
Essay—Commercial fertilizers and notes on agricultural chemistry, Prof. R. B. Warder.	163
Women as inventors, Mrs. L. May Wheeler.	173
Insects affecting corn crop, Prof. F. M. Webster	180
The management of agricultural fairs, J. N. Davidson.	217
The labor question, John Q. A. Sieg.	223
Agriculture as a source of prosperity, Col. J. B. Maynard	226
Drainage, Prof. J. L. Campbell	237
Some song-birds of Indiana, Prof. Maurice Thompson.	247
Comparison of various classes, J. M. Osborn	252
Fish culture, John Miller	263
Agriculture as a learned profession, Charles R. Dryer	268
Elkhart County, report of	289
Eastern Indiana, report of.	341
Edinburg Union, report of.	342
Exhibits of the agricultural societies of Indiana, table of	354–365

F.

Fertilizers, analysis of	18, 168
Fat stock show	19
Financial statement by Secretary	25
Furniture for new rooms.	45
Fertilizers, commercial	163
Fish culture	263
Pond culture	265
Fulton County, report of.	291
Fountain, Warren and Vermillion Society, report of.	342

G.

Page.

General Superintendent's annual report 44
Gibson County, report of 292
Grant County, report of 293
Greene County, report of 294

H.

Hamilton County, report of 296
Hancock County, report of 298
Harrison County, report of 298
Henry County, report of 299
Howard County, report of 302
Huntington County, report of 303
Henry, Madison and Wayne Society, report of 343
Horse Breeders, proceedings of 440
    Treasurer's report 440
    Constitution and By-laws 441
    Election of officers 449

I.

Introductory 15
Insurance 40
Insects affecting corn crop 180
    Affecting the seed after planting 181
    Affecting the roots 183
    Affecting the stem or stalk 190
    Affecting the leaves 195
    Affecting the silk or pollen 199
    Affecting the ear 200
Indiana products 366-369
Indiana agricultural statistics 370-381
    Corn 370
    Wheat 371
    Oats and barley 372
    Rye 373
    Flax seed 374
    Hay, timothy and clover 374
    Potatoes, Irish and sweet 375
    Tobacco 376
    Live stock 377
    Timber land 379
    Drainage in State 380
    Coal 381

J.

Jay County, report of 303
Jasper County, report of 304
Jefferson County, report of 306
Jennings County, report of 307
Jersey Cattle Breeders, proceedings of 428
    President's address 428
    Election of officers for 1886 429
    Causes of barrenness 429
    National Jersey Cattle and Dairy Show 431
    How best to utilize the products of our Jersey Herd 433
    How shall we best utilize the products? by Amos Garretson . 438

K.

Page.

Knox County, report of 307
Knightstown Union, report of 343

L.

Lease, expiration of 22
Laws 58
Labor question 223
Lagrange County, report of 309
Lake County, report of 311
Laporte County, report of 312
Lawrence District 344
Loogootee District 344

M.

Members of Board 1886, election of 57
Maynard, Col. J. B., address of 58, 226
Miller, John, address of 60, 263
Management of agricultural fairs 217
Madison County, report of 313
Marion County, report of 313
Monroe County, report of 315
Montgomery County, report of 315
Miami and Fulton, report of 345

N.

Nomination of candidates for members 29, 44
Newton County, report of 316
Noble County, report of 317
Northern Indiana and Southern Michigan, report of 346
Northeastern Indiana, report of 346

O.

Organization of new Board 17
Officers, election of 17
Osborn, J. M., address of 58, 252
Organization of Board of 1886 62
Officers, election of 62
Official list for 1886 8
Official record 6

P.

Posters, State Fair 21, 22
Premiums, payment of 24
Programmes annual meeting 25
President's address 30
Premium awards 63-99
Premiums on—Horses 63-68
    Cattle 68-71
    Sheep 71-74
    Hogs 74-76
    Poultry 77-79
    Agriculture 80-83
    Butter, cheese and honey 83-84
    Horticulture 84-87
    Geology and natural history 87-88
    Woman's Department 88-97
    Dogs 98-99

Page.

Plates of insects affecting corn crop . . . 204-215
Parke County, report of . . . 318
Perry County, report of . . . 319
Pike County, report of . . . 319
Porter County, report of . . . 321
Pulaski County, report of . . . 322
Putnam County, report of . . . 322
Plainfield District, report of . . . 347
Patrons' and Farmers' Society, report of . . . 347
Poplar Grove Society, report of . . . 348

R.

Resolution, encouragement of agriculture . . . 19
Recount of tickets . . . 25
Report of Secretary, financial exhibit . . . 35
    Treasurer, financial exhibit . . . 41
    Woman's department . . . 42
    General Superintendent . . . 44
Reports of Departments . . . 45-52
    Mechanical department . . . 45,46
    Poultry department . . . 47
    Cattle department . . . 48
    Carriages, buggies, etc . . . 49
    Agricultural department . . . 49
    Horticultural department . . . 50
    Swine department . . . 50
    Sheep department . . . 51
    Horse department . . . 51
    Amphitheater . . . 52
Resolutions, Agricultural societies . . . 55
    Pleuro-pneumonia . . . 55
    Drainage . . . 59
Reports of county and district agricultural societies . . . 278
Randolph County, report of . . . 323
Ripley County, report of . . . 324
Rush County, report of . . . 325
Record of officers . . . 6

S.

State Industrial Associations, list of . . . 7
Salaries of officers . . . 17
Signal service . . . 18, 19
Superintendent of departments . . . 20
Standing committees . . . 21, 30
State Geologist . . . 22
Superintendent of space . . . 22
Secretary's annual report . . . 35
Sieg, J. Q. A., address of . . . 58, 223
Smart, Prof. J. H., address of . . . 60
Salaries of officers . . . 62
Special merits, report of committees . . . 100
Some song-birds of Indiana . . . 247
Steuben County, report of . . . 326
Sullivan County, report of . . . 328
St. Joseph County, report of . . . 346

Page.

Southeastern Indiana, report of 348
Switzerland and Ohio, report of 349
Statistics of Indiana products 370-381
Shorthorn Breeders—Proceedings of January meeting, 1886 382
  Resolution concerning constitution 382
  President's address 382
  Scale of points, standard of excellence 385, 402
  Treasurer's report 385
  Value of Shorthorns Over Other Breeds, by J. Sankey 387
  Necessity and Value of Local Effort, Judge J. S. Buckles 390
  Reorganization, report of committee on 396
  Governor Gray's address 398
  Communication from Mrs. Virginia Meredith 399
  Social Relations Among Breeders 401
  Management of a Brood Herd 406
  History of Shorthorn Cattle in Indiana 413
  Election of officers 424
  Programme for next meeting 424
  Report of committees 425
Swine Breeders—Proceedings of 478
  President's address 478
  Winter Management of Breeding Swine 481
  Secretary and Treasurer's reports 486
  A Breeder's Observations at Fairs 486
  Value of Root Crops and Vegetables in Feeding 489
  Hog cholera 495
  Programme for next meeting 497
  Qualifications of a Successful Breeder 497
  Resolution, foreign markets 499
  Resolution, Judges 500
  Election of officers 501
  Remarks by Governor Gray 501

T.

Time of convention 28, 29
Treasurer's annual report 41
Thompson, Prof. Maurice, address of 247
Tippecanoe County, report of 329
Tipton County, report of 330

U.

Urmyville District, report of 361

V.

Vigo County, report of 331

W.

Weather reports 8
Woman's Department, communication from 20, 21
Wheeler, Mrs. L. May, address of 42, 173
Woman's Department, report of 42
Webster, Prof. F. M., address of 53, 180
Warder, Prof. R. B., address of 163

Page.

Women as Inventors . . . 173
Wabash County, report of . . . 332
Warren County, report of . . . 333
Warrick County, report of . . . 333
Washington County, report of . . . 335
Wayne County, report of . . . 336
Whitley County, report of . . . 337
Wayne, Henry and Randolph, report of . . . 352
Wells and Blackford, report of . . . 352
Wool Growers, proceedings of . . . 450
  Treasurer's report . . . 450
  Secretary's report . . . 450
  President's address . . . 451
  Relation of Sheep-raising to Farming . . . 453
  Preparing Sheep for the Show Ring . . . 455
  Resolution . . . 460
  Profits of Sheep Husbandry . . . 460
  Programme for next meeting . . . 463
  Climate, Feed and Shelter, influence of . . . 464
  Shropshire Sheep . . . 469
  Resolution, death of John H. Swales . . . 475
  Election of officers . . . 476
  Resolution, sheep department at fairs . . . 476

X.

Xenia District, report of . . . 353